SECTION 00490

ADDENDUM NO. 2

RAW WATER SUPPLY IMPROVEMENTS
BRUNSWICK REGIONAL WATER AND SEWER H2GO
LELAND, NORTH CAROLINA

SUBJECT: ADDENDUM NO. 2 **SEPTEMBER 10, 2024**

To the Plans and Specifications for:
Raw Water Supply Improvements
Leland, N.C.

To: PROSPECTIVE BIDDERS AND OTHER CONCERNED PARTIES

This ADDENDUM forms a part of the Contract Documents and modifies the original Bidding Documents as noted below. Bidders shall acknowledge receipt of the ADDENDUM in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.

A. General
   1. NCDOT Encroachment E033-010-24-00252 IFB is attached.

B. Bidding Requirements
   1. Document 00410, Bid Form
      a. Replace this document in its entirety with the revised Section 00410, Bid Form noted as "Attachment to Addendum No. 2".

C. Technical Specification Requirements
   1. Section 01230, Alternates
      a. **Replace** this specification section in its entirety with the attached Section 01230, Alternates noted as "Attachment to Addendum No. 2".
   2. Section 01270, Unit Prices
      a. Paragraph 1.30 – **Change** the words "FORCE MAIN" to read as "RAW WATER MAIN".
      b. Paragraph 1.30.B – **Change** to read as follows:
         B. Work: Complete installation from station to station as indicated on the Drawings including, but not limited to, clearing, access to launching and target pits excavating, installing, horizontal directional drilling, backfilling, (including class I material as specified for the pipe bedding, haunching, and initial backfill), off-site borrow material, compacting, testing, flushing, disinfection, pipe material within directional drilling limits which includes transition to open cut installation for connection to restrained joint pipe at ends of drill, seeding, mulching and tacking, associated erosion control measures, and all labor, materials, and accessories required for a complete installation. Pricing shall be for a guaranteed installation, regardless of the conditions encountered with the exception to launch/receiving pit rock excavation, and no payment shall be made for failed attempts to install pipe by directional drill.
      c. Paragraph 1.47.B: Add the following items:
         10. Disinfection of complete well assembly, disposal of chlorinated water, and bacteriological and chlorine residual sampling and testing.

11. Coordination and scheduling of start-up and testing services.

d. **Add** Paragraph **1.48 (X) INCH SDR 9 HDPE RAW WATER MAIN BY HORIZONTAL DIRECTIONAL DRILL (ALTERNATE No. 2)**

A. Measurement: Measurement for one complete directional drill installed.

B. Work: Complete installation from station to station as indicated on the Drawings including, but not limited to, clearing, access to launching and target pits excavating, installing, horizontal directional drilling, backfilling, (including class I material as specified for the pipe bedding, haunching, and initial backfill), off-site borrow material, compacting, testing, flushing, disinfection, pipe material within directional drilling limits which includes transition to open cut for connection to restrained joint pipe at ends of drill (including HDPE MJ adapters and DI MJ reducers), seeding. mulching and tacking, associated erosion control measures, and all labor, materials, and accessories required for a complete installation. Pricing shall be for a guaranteed installation, regardless of the conditions encountered with the exception to launch/receiving pit rock excavation, and no payment shall be made for failed attempts to install pipe by directional drill.

3. Section 02447, Horizontal Directional Drilling for Pipe Installation

a. **Replace** this specification section in its entirety with the attached Section 02447, Horizontal Directional Drilling noted as “Attachment to Addendum No. 2”.

4. Section 11068, Submersible Well Pump

a. Paragraph 1.01.D: **Change** to read as follows: Owner shall provide the well pump and motor, motor adapter, power cable, associated submittal and Operation and Maintenance Manual data, and start-up/testing Services. Contractor shall provide Surface (Base) Plate, 6” discharge column, riser check valves, installation of all Owner provided well pump equipment, disinfection, bacteriological and chlorine residual testing, and coordination and scheduling of start-up and testing services.

b. Paragraph 1.02.A.2: **Change** Pump Setting from 270 feet to 290 feet (below land surface). Contractor shall utilize this setting for determining quantity of 6” discharge column pipe required.

c. Paragraph 1.02.B.2: **Change** Pump Setting from 430 feet to 450 feet (below land surface). Contractor shall utilize this setting for determining quantity of 6” discharge column pipe required.

d. Paragraph 1.02.C.2: **Change** Pump Setting from 280 feet to 300 feet (below land surface). Contractor shall utilize this setting for determining quantity of 6” discharge column pipe required.

e. Paragraph 1.02.D.2: **Change** Pump Setting from 380 feet to 400 feet (below land surface). Contractor shall utilize this setting for determining quantity of 6” discharge column pipe required.

f. Paragraph 1.02.E.2: **Change** Pump Setting from 270 feet to 290 feet (below land surface). Contractor shall utilize this setting for determining quantity of 6” discharge column pipe required.

g. Paragraph 1.02.F.2: **Change** Pump Setting from 380 feet to 400 feet (below land surface). Contractor shall utilize this setting for determining quantity of 6” discharge column pipe required.

h. Paragraph 2.03 Riser Check Valves – Contractor shall plan to provide 3 check valves in the well riser pipe for each well based upon a 150 ft spacing.

5. Section 13500, Electrical Equipment Centers

a. Paragraph 1.01.A: **Revise** to read as follows: “The Walk-in Electrical Equipment Center shall be a completely self-contained building custom

designed to specific equipment layouts and environmental conditions. The minimum aisle space, clearance around equipment, entrance to and egress from the space shall be designed per Section 110.6 (Spaces About Electrical Equipment) of the latest National Electric Code. The enclosure shall completely enclose and protect the internal electrical equipment. The housing shall support and withstand all imposed loads. No loading shall be transferred to the interior equipment in any way. The building is intended to be field erected at the site on a cast-in-place concrete slab."

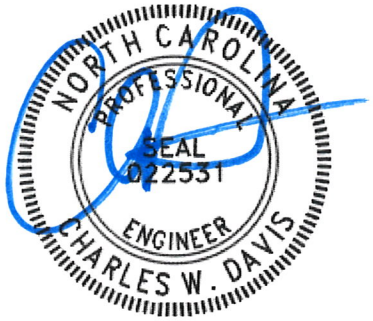
b. Paragraph 2.02: **Delete** Paragraphs A, B, and C in their entirety.

D. Drawing Requirements

1. Bulletin Drawing BD-01, HDPE to DIP to PVC Transition
   a. See attached Bulletin Drawing BD-01 for HDPE to PVC transition detail.
2. Bulletin Drawing BD-02, Flanged Adapter
   a. See attached Bulletin Drawing BD-02 for HDPE to MJ Adapter detail.
3. Drawing C-2.01, Well Site Plan – 6
   a. **Change** electrical building dimensions to read as "11'x21'x10'".
4. Drawing C-2.02, Well Site Plan – 7
   a. **Change** electrical building dimensions to read as "11'x21'x10'".
5. Drawing C-2.03, Well Site Plan – 8
   a. **Change** electrical building dimensions to read as "11'x21'x10'".

Bids will be received until 2:00 pm, September 17, 2024.

FOR THE OWNER
THE WOOTEN COMPANY



BY 10-SEPT-24
Charles W. Davis, P.E.

END OF DOCUMENT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

September 5, 2024

H2GO Brunswick Regional Water & Sewer
Bob Walker, Executive Director
516 Village Road
Leland, NC 28451

SUBJECT: Encroachment Agreement (E033-010-24-00252 IFB) Issued for Bid on SR 1446 (Wolfridge Road NE) and SR 1414 (Goodman Road NE) located from the intersection of SR 1414 and SR 1446 north to the terminus of SR 1446 in Brunswick County.

Dear Applicant,

Attached for your files is a copy of Right of Way Encroachment agreement properly executed. This agreement covers the following:

Installation of approximately 3,700 LF of 18" raw water main and appurtenances from well sites north of SR 1446 to connect with an existing line on SR 1414. See attached plans for details.

- **THIS IS FOR BID PURPOSES ONLY. NOT ISSUED FOR CONSTRUCTION PURPOSES.**
- After contract is awarded, the Engineer of Record shall submit Issue of Construction drawings & all associated documents for final review and approval.
- Brunswick Regional Water & Sewer H2GO has provided a letter stating that they will not release their contractor's bond until the NCDOT agrees that the work performed under this permit meets or exceeds NCDOT standards. The Encroaching Party shall notify NCDOT at 910-398-9100 upon completion of the work for a final inspection.
- A preconstruction meeting is required prior to beginning work. Field verification is required prior to the preconstruction meeting. Preconstruction meetings are valid for 90 days. Contact the District office to schedule.
- Time Restriction – No Restrictions: (HOURS SUBJECT TO CHANGE DUE TO TRAFFIC CONDITIONS).
- Follow all MUTCD traffic control requirements. If working within 5 feet of the edge of travel, a lane closure is required.
- Restore all affected ditches and driveways to original or better condition.
- No appurtenances shall be placed in the maintenance area or the ditch (this includes front and back slopes).
- **If working within the theoretical 1:1, contractor must "Actively protect the integrity of the roadway".**
- The Encroaching Party is responsible for any and all damages caused from project work within the right-of way, including damage to drainage structures, pavement, vegetation, etc.
- For pre-construction meeting, the Encroaching party or their contractor shall provide three (3) business days advance notice prior to construction activity within the NCDOT Right of Way, contact NCDOT office at (910) 398 9118 to conduct this meeting or by email rechavis1@ncdot.gov.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5911 OLEANDER DRIVE, SUITE 101
WILMINGTON, NC 28403

Telephone: 910-398-9100
Customer Service: 1-877-368-4968

Website: ncdot.gov

Location:
5911 OLEANDER DRIVE, SUITE 101
WILMINGTON, NC 28403

04-11-03 COURIER

As per this approval it is subject to this work being done in accordance with the attached plan sheets and special provisions.

Sincerely,

DocuSigned by:
Michael Bass
E254FB0739E2460...

Michael L. Bass Jr., Assistant District Engineer
For Trevor Carroll, PE, Division Engineer
DCK/mlb/rec

ec: Trey Moore, NCDOT Brunswick County Maintenance Engineer

ROUTE SR-1446, SR-1414 PROJECT _____ COUNTY OF BRUNSWICK

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

-AND-

H2GO BRUNSWICK REGIONAL WATER & SEWER

RIGHT OF WAY ENCROACHMENT AGREEMENT

PRIMARY AND SECONDARY HIGHWAYS

THIS AGREEMENT, made and entered into this the 5th day of September 20 24 by and between the Department of Transportation, party of the first part; and H2GO BRUNSWICK REGIONAL WATER & SEWER party of the second part,

WITNESSETH

THAT WHEREAS, the party of the second part desires to encroach on the right of way of the public road designated as Route(s) SR-1446, SR-1414, located FROM THE INTERSECTION OF SR-1414 AND SR-1446 NORTH TO THE TERMINUS OF SR-1446

with the construction and/or erection of: APPROX. 3700 LF OF 18" RAW WATER MAIN AND APPURTENANCES FROM WELL SITES NORTH OF SR-1446 TO CONNECT WITH AN EXISTING LINE ON SR-1414.

WHEREAS, it is to the material advantage of the party of the second part to effect this encroachment, and the party of the first part in the exercise of authority conferred upon it by statute, is willing to permit the encroachment within the limits of the right of way as indicated, subject to the conditions of this agreement;

NOW, THEREFORE, IT IS AGREED that the party of the first part hereby grants to the party of the second part the right and privilege to make this encroachment as shown on attached plan sheet(s), specifications and special provisions which are made a part hereof upon the following conditions, to wit:

That the installation, operation, and maintenance of the above described facility will be accomplished in accordance with the party of the first part's latest UTILITIES ACCOMMODATIONS MANUAL, and such revisions and amendments thereto as may be in effect at the date of this agreement. Information as to these policies and procedures may be obtained from the Division Engineer or State Utilities Manager of the party of the first part.

That the said party of the second part binds and obligates himself to install and maintain the encroaching facility in such safe and proper condition that it will not interfere with or endanger travel upon said highway, nor obstruct nor interfere with the proper maintenance thereof, to reimburse the party of the first part for the cost incurred for any repairs or maintenance to its roadways and structures necessary due to the installation and existence of the facilities of the party of the second part, and if at any time the party of the first part shall require the removal of or changes in the location of the said facilities, that the said party of the second part binds himself, his successors and assigns, to promptly remove or alter the said facilities, in order to conform to the said requirement, without any cost to the party of the first part.

That the party of the second part agrees to provide during construction and any subsequent maintenance proper signs, signal lights, flagmen and other warning devices for the protection of traffic in conformance with the latest Manual on Uniform Traffic Control Devices for Streets and Highways and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the Division Engineer of the party of the first part.

That the party of the second part hereby agrees to indemnify and save harmless the party of the first part from all damages and claims for damage that may arise by reason of the installation and maintenance of this encroachment.

That the party of the second part agrees to restore all areas disturbed during installation and maintenance to the satisfaction of the Division Engineer of the party of the first part. The party of the second part agrees to exercise every reasonable precaution during construction and maintenance to prevent eroding of soil; silting or pollution of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces or other property; or pollution of the air. There shall be compliance with applicable rules and regulations of the North Carolina Division of Environmental Management, North Carolina Sedimentation Control Commission, and with ordinances and regulations of various counties, municipalities and other official agencies relating to pollution prevention and control. When any installation or maintenance operation disturbs the ground surface and existing ground cover, the party of the second part agrees to remove and replace the sod or otherwise reestablish the grass cover to meet the satisfaction of the Division Engineer of the party of the first part.

That the party of the second part agrees to assume the actual cost of any inspection of the work considered to be necessary by the Division Engineer of the party of the first part.

That the party of the second part agrees to have available at the construction site, at all times during construction, a copy of this agreement showing evidence of approval by the party of the first part. The party of the first part reserves the right to stop all work unless evidence of approval can be shown.

Provided the work contained in this agreement is being performed on a completed highway open to traffic; the party of the second part agrees to give written notice to the Division Engineer of the party of the first part when all work contained herein has been completed. Unless specifically requested by the party of the first part, written notice of completion of work on highway projects under construction will not be required.

That in the case of noncompliance with the terms of this agreement by the party of the second part, the party of the first part reserves the right to stop all work until the facility has been brought into compliance or removed from the right of way at no cost to the party of the first part.

That it is agreed by both parties that this agreement shall become void if actual construction of the work contemplated herein is not begun within one (1) year from the date of authorization by the party of the first part unless written waiver is secured by the party of the second part from the party of the first part.

During the performance of this contract, the second party, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor"), agrees as follows:

a. Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the U. S. Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

b. Nondiscrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials

and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

c. Solicitations for Subcontracts, including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

d. Information and Reports: The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

e. Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to,

(1) withholding of payments to the contractor under the contract until the contractor complies, and/or
(2) cancellation, termination or suspension of the contract, in whole or in part.

f. Incorporation of Provisions: The contractor shall include the provisions of paragraphs "a" through "f" in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Department of Transportation to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

R/W (161) : Party of the Second Part certifies that this agreement is true and accurate copy of the form R/W (161) incorporating all revisions to date.

IN WITNESS WHEREOF, each of the parties to this agreement has caused the same to be executed the day and year first above written.

DEPARTMENT OF TRANSPORTATION

DocuSigned by:
BY: Michael Bass Michael L. Bass Jr., Assistant District Engineer
DIVISION ENGINEER For Trevor Carroll, PE, Division Engineer
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ATTEST OR WITNESS:

Brunswick Regional Water & Sewer
Deana Greiner, Clerk to Board
Deana Greiner

Brunswick Regional Water & Sewer
Bob. Walker, Executive Director
Bob Walker
Second Party

INSTRUCTIONS

When the applicant is a corporation or a municipality, this agreement must have the corporate seal and be attested by the corporation secretary or by the empowered city official, unless a waiver of corporate seal and attestation by the secretary or by the empowered City official is on file in the Raleigh office of the State Utilities Manager. In the space provided in this agreement for execution, the name of the corporation or municipality shall be typed above the name, and title of all persons signing the agreement should be typed directly below their signature.

When the applicant is not a corporation, then his signature must be witnessed by one person. The address should be included in the agreement and the names of all persons signing the agreement should be typed directly below their signature.

This agreement must be accompanied, in the form of an attachment, by plans or drawings showing the following applicable information:

1. All roadways and ramps.
2. Right of way lines and where applicable, the control of access lines.
3. Location of the existing and/or proposed encroachment.
4. Length, size and type of encroachment.
5. Method of installation.
6. Dimensions showing the distance from the encroachment to edge of pavement, shoulders, etc.
7. Location by highway survey station number. If station number cannot be obtained, location should be shown by distance from some identifiable point, such as a bridge, road, intersection, etc. (To assist in preparation of the encroachment plan, the Department's roadway plans may be seen at the various Highway Division Offices, or at the Raleigh office.)
8. Drainage structures or bridges if affected by encroachment (show vertical and horizontal dimensions from encroachment to nearest part of structure).
9. Method of attachment to drainage structures or bridges.
10. Manhole design.
11. On underground utilities, the depth of bury under all traveled lanes, shoulders, ditches, sidewalks, etc.
12. Length, size and type of encasement where required.
13. On underground crossings, notation as to method of crossing - boring and jacking, open cut, etc.
14. Location of vents.

GENERAL REQUIREMENTS

1. Any attachment to a bridge or other drainage structure must be approved by the State Utilities Manager in Raleigh prior to submission of encroachment agreement to the Division Engineer.
2. All crossings should be as near as possible normal to the centerline of the highway.
3. Minimum vertical clearances of overhead wires and cables above all roadways must conform to clearances set out in the National Electric Safety Code.
4. Encasements shall extend from ditch line to ditch line in cut sections and 5' beyond toe of slopes in fill sections.
5. All vents should be extended to the right of way line or as otherwise required by the Department.
6. All pipe encasements as to material and strength shall meet the standards and specifications of the Department.
7. Any special provisions or specifications as to the performance of the work or the method of construction that may be required by the Department must be shown on a separate sheet attached to encroachment agreement provided that such information cannot be shown on plans or drawings.
8. The Department's Division Engineer should be given notice by the applicant prior to actual starting of installation included in this agreement.

BRUNSWICK REGIONAL WATER AND SEWER H2GO

Encroachment Agreement Standard Conditions

District Office Contact Information:
5911 Oleander Drive, Suite 101
Wilmington, NC 28403
(910) 398-9100

The ***Standard Conditions*** in this document apply to this and all encroachment agreements issued by District 3.

Pre-Construction

SC1 A ***Pre-Construction Meeting*** **is required** prior to beginning work. Contact the District Office to schedule.

SC2 This permit along with all terms and agreements shall be incorporated into any lease or sales agreement.

SC3 Approval may be rescinded upon failure to follow any of the provisions in this permit and may be considered a violation of the encroachment agreement.

SC4 If the approved permit encroaches within the limits of an active construction project the Encroaching Party will be required to coordinate with the NCDOT contractor as well as secure a hold harmless agreement prior to commencing work. If the approved permit encroaches within the limits of a project in preconstruction, the Encroaching Party will be required to coordinate with the Department's Project Development Unit to ensure no conflicts are created with the installation.

SC5 The Encroaching party or their contractor shall provide the following notices prior to construction activity within the NCDOT Right of Way:

a. Three (3) business days advance phone call at telephone (910) 398-9100 or email to div3dist3@ncdot.gov to the District Engineer's office
b. If the construction falls within the limits of an NCDOT managed construction project, five (5) business days advance phone call to the Resident Engineer, Josh Pratt at (910) 398-9130 or email jtpratt@ncdot.gov.

Failure to provide these notifications prior to beginning construction is subject to the Division Engineer's discretion to cease construction activity for this encroachment. NCDOT reserves the right to cease any construction or maintenance work associated with this installation by the encroaching party until the construction or maintenance meets the satisfaction of the Division Engineer or their representative.

SC6 Prior to beginning work, it is the requirement of the Encroaching Party to contact the appropriate Utility Companies involved and make arrangements to adjust or relocate any utilities that conflict with the proposed work.

SC7 It shall be the responsibility of the encroaching party to determine the location of utilities within the encroachment area. NCGS § 87-115 through § 87-130 of the Underground Utility Safety and Damage Prevention Act requires underground utilities to be located by calling 811 prior to construction. The encroaching party shall be responsible for notifying other utility owners and providing protection and safeguards to prevent damage or interruption to existing facilities and maintain access to them.

SC8 The encroaching party shall notify the appropriate municipal office prior to beginning any work within the municipality's limits of jurisdiction.

SC9 NC 811 services DOES NOT provide locates of traffic signal cables. Excavation within 1000 feet of a signalized intersection will require notification by the encroaching party to the Division Traffic Engineer's Office at telephone number (910) 341-2200 no less than one week prior to beginning work. All traffic signal or detection cables must be located prior to excavation. **Cost to replace or repair NCDOT signs, signals, pavement markings or associated equipment and facilities shall be the responsibility of the encroaching party.**

SC10 If modifications to a traffic signal are required under this encroachment agreement, a separate traffic agreement is required prior to work. Contact the Division Traffic Engineer or Deputy Division Traffic Engineer at (910) 341-2200.

SC11 This agreement does not authorize installations within nor encroachment onto railroad rights of way. Permits for installations within railroad right of way must be obtained from the railroad and are the responsibility of the encroaching party.

SC12 At the discretion of the District Engineer, a NOTIFICATION FOR UTILITY / NON-UTILITY ENCROACHMENT WITHIN NCDOT R/W form (See corresponding attachment) with the scheduled pre-construction meeting and associated

construction schedule details must be completed and submitted to the District Engineer's office a minimum of one week prior to construction.

SC13 At the discretion of the District Engineer, the encroaching party (not the utility contractor) shall make arrangements to have a qualified inspector, under the supervision of a Professional Engineer registered in North Carolina, on site at all times during construction. The registered Professional Engineer shall be required to submit a signed and PE sealed certification that the utility was installed in accordance with the encroachment agreement.

Legal & Right-of-Way Issues

SC14 This approval and associated plans and supporting documents shall not be interpreted to allow any design change or change in the intent of the design by the Owner, Design Engineer, or any of their representatives. Any revisions or changes to these approved plans or intent for construction must be obtained in writing from the Division Engineer's office or their representative prior to construction or during construction, if an issue arises during construction to warrant changes. No alteration of the approved plan will be allowed without written approval by NCDOT. All design plan changes proposed by the contractor shall be prepared by the Engineer of Record and submitted by the Owner/Permittee to NCDOT for review to ensure that the Engineer and Owner participate in all construction changes. Field changes constructed without prior written approval by NCDOT will not be accepted by NCDOT during the inspection process.

SC15 NCDOT does not guarantee the right of way on this road, nor will it be responsible for any claim for damages brought about by any property owner by reason of this installation. It is the responsibility of the encroaching party to verify the right of way.

SC16 Encroaching party shall be responsible for obtaining all necessary permanent and/or temporary construction, drainage, utility and/or sight distance easements.

SC17 It shall be the responsibility of the property owner or local municipality to maintain any proposed sidewalk that will be placed within the NCDOT Right of Way. It is the responsibility of the Encroaching Party to place the sidewalk and wheelchair ramps per NCDOT standards and the latest edition of the Americans with Disabilities Act. This maintenance requires an encroachment agreement through the District Office.

SC18 No commercial advertising shall be allowed within NCDOT Right of Way.

SC19 The encroaching party shall obtain proper approval from all affected pole owners prior to attachment to any pole.

SC20 The installation within the Control of Access fence shall not adversely affect the design, construction, maintenance, stability, traffic safety or operation of the controlled access highway, and the utility must be serviced without access from the through-traffic roadways or ramps.

SC21 It shall be unlawful to place any highway obstruction, including a driveway headwall, fence, rural mailbox, newspaper delivery box, or other roadside obstruction, so as to interfere with the traffic or maintenance of the roads and highways of the state highway system. See North Carolina Administrative Code 19A NCAC 2E.0404.

Bonds

SC22 A Performance and Indemnity Bond posted with the North Carolina Department of Transportation is hereby obligated to cover work under this encroachment agreement. This bond is only for work within NCDOT Right of Way.

SC23 An ***Initial Construction Inspection*** **is required** after the completion of the work. An Initial Inspection Report will be issued upon satisfactory completion of the work and begins the one year warranty period. Contact the District Office to schedule an inspection.

SC24 A ***Final inspection*** **is required** after one year and prior to release of the bond. Contact the District Office three months prior to the end of the one year bonding period for final inspection and creation of a list of deficiencies; this should provide enough time for corrective action prior to the end of one year. A Final Inspection Acceptance will be issued once the work has been completed and any deficiencies addressed.

SC25 All bonds will be held for a minimum of one year from the time of the *Initial Construction Inspection* Acceptance. At the end of that time period, the bond may be released at the request of the applicant pending Final Inspection Acceptance.

Work Zone Traffic

SC26 WORK ZONE TRAFFIC CONTROL QUALIFICATIONS AND TRAINING PROGRAM

All personnel performing any activity inside the highway right of way are required to be familiar with the NCDOT Maintenance / Utility Traffic Control Guidelines (MUTCG). No specific training course or test is required for qualification in the Maintenance /Utility Traffic Control Guidelines (MUTCG).

All flagging, spotting, or operating Automated Flagger Assist Devices (AFAD) inside the highway right of way requires qualified and trained Work Zone Flaggers. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

All personnel involved with the installation of Work Zone Traffic Control devices inside the highway right of way are required to be qualified and trained Work Zone Installers. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

All personnel in charge of overseeing work zone Temporary Traffic Control operations and installations inside the highway right of way are required to be qualified and trained Work Zone Supervisors. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

For questions and/or additional information regarding this training program please refer to https://connect.ncdot.gov/projects/WZTC/Pages/Training.aspx or call the NCDOT Work Zone Traffic Control Section (919) 814-5000.

SC27 The party of the second part shall employ traffic control measures that are in accordance with the prevailing federal, state, local, and NCDOT policies, standards, and procedures. These policies, standards, and procedures include, but are not limited to the following:

a. Manual on Uniform Traffic Control Devices (MUTCD) – North Carolina has adopted the MUTCD to provide basic principles and guidelines for traffic control device design, application, installation, and maintenance. North Carolina uses the MUTCD as a minimum requirement where higher supplemental standards specific to North Carolina are not established. Use fundamental principles and best practices of MUTCD (Part 6, Temporary Traffic Control).
b. NCDOT Maintenance / Utility Traffic Control Guidelines – This document enhances the fundamental principles and best practices established in MUTCD Part 6, Temporary Traffic Control, incorporating NCDOT-specific standards and details. It also covers important safety knowledge for a wide range of work zone job responsibilities.

SC28 There shall be no lane closures, narrowing of lanes, detaining and/or altering the traffic flow on or during holidays, holiday weekends, special events or any other time when traffic is unusually heavy, including the following schedules:

a. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.
b. For **New Year's Day**, between the hours of **6:00 AM** December 31st and **7:00 PM** January 2nd. If New Year's Day is on a Friday, Saturday, Sunday, or Monday, then until **7:00 PM** the following Tuesday.
c. For **Easter**, between the hours of **6:00 AM** Thursday and **7:00 PM** Monday.
d. For **Memorial Day**, between the hours of **6:00 AM** Friday and **7:00 PM** Tuesday.
e. For **Independence Day**, between the hours of **6:00 AM** the day before Independence Day and **7:00 PM** the day after Independence Day.
   If **Independence Day** is on a Friday, Saturday, Sunday, or Monday, then between the hours of **6:00 AM** the Thursday before Independence Day and **7:00 PM** the Tuesday after Independence Day.
f. For **Labor Day**, between the hours of **6:00 AM** Friday and **7:00 PM** Tuesday.
g. For **Thanksgiving**, between the hours of **6:00 AM** Tuesday and **7:00 PM** Monday.
h. For **Christmas**, between the hours of **6:00 AM** the Friday before the week of Christmas Day and **7:00 PM** the following Tuesday after the week of Christmas Day.

These restrictions are in addition to any lane closure restrictions list in the Encroachment Special Provisions.

SC29 If the Traffic Control Supervisor determines that portable concrete barrier (PCB) is required to shield a hazard within the clear zone, then PCB shall be designed and sealed by a licensed North Carolina Professional Engineer. PCB plans and design calculations shall be submitted to the District Engineer for review and approval prior to installation.

SC30 Ingress and egress shall be maintained to all businesses and dwellings affected by the project. Special attention shall be paid to police, EMS and fire stations, fire hydrants, secondary schools, and hospitals.

SC31 Two-way traffic shall be maintained at all times unless designated by the District Engineer. Traffic shall not be rerouted or detoured without the prior written approval from the District Engineer. No utility work will be allowed on state holidays from 7:00 PM the night before through 9:00 AM the day prior to, following or during local events without prior approval from the District Engineer. If the construction is within 1000 feet of a school location or on a designated bus route, the construction shall be coordinated with the school start and end times to avoid traffic delays.

SC32 Work requiring lane or shoulder closures shall not be performed on both sides of the road simultaneously within the same area.

SC33 Any work requiring equipment or personnel within 5 feet of the edge of any travel lane of an undivided facility and within 10 feet of the edge of any travel lane of a divided facility shall require a lane closure with appropriate tapers per current *NCDOT Roadway Standard Drawings or MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES*.

SC34 At the discretion of the District Engineer, a traffic control plan shall be developed and submitted under the seal and signature of a Licensed North Carolina Professional Engineer prior to construction. The plan shall be specific to the site and adequately detailed. Issues such as the close proximity to intersections shall be addressed.

SC35 If pavement markings are required under this encroachment agreement, the Encroaching Party shall have the pavement markings pre-marked, inspected, and approved by NCDOT personnel prior to the placement of final pavement markings. Contact Traffic Services at (910) 341-2200 for pre-marking inspections or field changes.

SC36 All temporary and final pavement markings are the responsibility of the encroaching party. Centerline pavement markings shall be installed the same day resurfacing is accomplished. All other pavement markings shall be completed within five days of resurfacing. Final pavement markings and sign plans shall be submitted with the encroachment request to the Division Traffic Engineer prior to construction. Final pavement markings shall be thermoplastic unless otherwise directed by the Division Traffic Engineer or District Engineer.

SC37 Any pavement markings that are damaged or obliterated shall be restored by the encroaching party at no expense to NCDOT.

SC38 All concrete or paved channelization islands shall have a 12 inch diameter round or square smooth wall hole drilled, cored, formed, or air-hammered to the subgrade and backfilled with soil placed a minimum of 10 feet from the nose of each end of the island (see Roadway Standard Drawing 904.50), or as directed by the engineer. All sign supports that are to be erected in existing or proposed concrete or paved channelization islands shall meet the same requirements. If necessary, contact Traffic Services at (910) 341-2200 to mark core locations.

SC39 Sidewalk closures shall be installed, as necessary. Pedestrian traffic shall be detoured around these closures and shall be signed appropriately and in accordance with The American with Disabilities Act Accessibility Guidelines. The encroaching party must adhere to the guidelines for accommodating pedestrians in encroachment work zones as described in the NCDOT Pedestrian Work Zone Accommodations Training found at https://www.youtube.com/watch?v=AOuYa5IW3dg&feature=youtu.be.

Roadside Environmental

SC40 The encroaching party shall comply with all applicable Federal, State and local environmental regulations and shall obtain all necessary Federal, State and local environmental permits, including but not limited to, those related to sediment control, stormwater, wetland, streams, endangered species and historical sites. Additional information can be obtained by contacting the NCDOT Division Environmental Office regarding the North Carolina Natural Heritage Program or the United States Fish and Wildlife Services. Contact the Division Environmental Office at (910) 341-2000.

SC41 The Verification of Compliance with Environmental Regulations (VCER-1) form is required for all non-utility encroachment agreements or any utility encroachments. The VCER-1 form must be signed and/or sealed by a NC registered professional engineer (PE), registered land surveyor (RLS), or authorized personnel who has verified that all appropriate environmental permits (if applicable) have been obtained and all applicable environmental regulations have been followed.

SC42 All erosion control devices and measures shall be constructed, installed, maintained, and removed by the Encroacher in accordance with all applicable Federal, State, and Local laws, regulations, ordinances, and policies. Permanent vegetation shall be established on all disturbed areas in accordance with the recommendations of the Division Roadside Environmental Engineer. All areas disturbed (shoulders, ditches, removed accesses, etc.) shall be graded and seeded in accordance with the latest *NCDOT Standards Specifications for Roads and Structures* and within 15 calendar days with an approved NCDOT seed mixture (all lawn type areas shall be maintained and reseeded as such). Seeding rates per acre shall be applied according to the Division Roadside Environmental

Engineer. Any plants, vegetation or trees in the NCDOT planted sites that is destroyed or damaged as a result of this encroachment shall be replaced with plants, vegetation or trees of like kind or similar shape. Contact the Division Roadside Environmental Engineer at 910-259-4919.

SC43 No trees within NCDOT shall be cut without authorization from the Division Roadside Environmental Engineer. An inventory of trees measuring greater than 4 caliper inches (measured 6" above the ground) is required when trees within C/A right of way will be impacted by the encroachment installation. Mitigation is required and will be determined by the Division Roadside Environmental Engineer's Office.

SC44 The applicant is responsible for identifying project impacts to waters of the United States (wetlands, intermittent streams, perennial streams and ponds) located within the NCDOT right-of-way. The discharge of dredged or fill material into waters of the United States requires authorization from the United States Army Corps of Engineers (USACE) and certification from the North Carolina Division of Water Quality (NCDWQ). The applicant is required to obtain pertinent permits or certification from these regulatory agencies if construction of the project impacts waters of the United States within the NCDOT right-of-way. The applicant is responsible for complying with any river or stream Riparian Buffer Rule as regulated by the NCDWQ. The Rule regulates activity within a 50-foot buffer along perennial streams, intermittent streams and ponds. Additional information can be obtained by contacting the NCDWQ or the USACE.

SC45 The contractor shall not begin the construction until after the traffic control and erosion control devices have been installed to the satisfaction of the Division Engineer or their agent.

SC46 The contractor shall perform all monitoring and record keeping and any required maintenance of erosion and sediment control measures to maintain compliance with stormwater regulations.

STIP (or Division Managed) Projects

SC47 State Transportation Improvement Projects (STIP) – If encroachment falls within a STIP that is active or in design when installation takes place coordination with Division Utility Coordinator is required. If project is specifically within an active STIP then a hold harmless letter from NCDOT's contractor will be required. Any encroachment determined to be in conflict STIP construction shall be removed and/or relocated at the encroaching party's expense.

Construction

General

SC48 An executed copy of the encroachment agreement, provisions and approved plans shall be present at the construction site at all times. NCDOT reserves the right to stop all work unless evidence of approval can be shown. Additionally, if safety or traffic conditions warrant such an action, NCDOT reserves the right to further limit, restrict or suspend operations within the right of way.

SC49 The Encroaching Party and/or their Contractor shall comply with all OSHA requirements and **provide a competent person on site** to supervise excavation at all times. If OSHA visits the work area associated with this encroachment, the District Office shall be notified by the encroaching party immediately if any violations are cited.

SC50 The Encroaching Party shall follow any and all revisions shown in **RED** on attached plan(s).

SC51 All disturbed areas are to be fully restored to current NCDOT minimum roadway standards or as directed by the Division Engineer or their representative. Disturbed areas within NCDOT Right-of-Way include, but not limited to, any excavation areas, pavement removal, drainage or other features.

SC52 All drainage structures disturbed, damaged or blocked shall be restored to its original condition as directed by the Division Engineer or their representative.

SC53 All pipes placed within the NCDOT Right of Way shall be NCDOT approved materials. All joints shall be sealed with mortar or other NCDOT approved material. Backfill compaction shall meet NCDOT Standardized Testing Method.

SC54 Throughout the life of the project, the Encroaching Party shall maintain all drop-offs within the work zone such that they do not exceed the maximum of 2".

SC55 All removed curb, driveways, and shoulder areas shall be backfilled at a 6:1 slope or flatter at the end of the days' production.

SC56 Abandoned pipes 12" in diameter and larger in fills 20' or less shall be removed and backfilled, filled with grout, or plugged, as directed by the Manager of Right-of-Way, Division Engineer or State Design Services Engineer. There may be unusual circumstances where the same requirements will apply on pipes smaller than 12".

SC57 For trenching excavations within the typical ditch cross-section, positive drainage shall be restored within the existing ditch by grading between driveway pipe invert elevations or by re-establishing the original hydraulic grade line.

SC58 Material shall NOT be unloaded or stockpiled on the roadway at any time without proper lane closure during the project. Work is not permitted when the shoulder material is wet or during adverse weather conditions.

SC59 The placement of curb and gutter is not allowed within shoulder sections of roadway.

SC60 A minimum of 5 feet (10 feet desirable) clearance is required for utility installations beneath or near drainage pipes, headwalls, and a minimum of two-foot clearance below the flowline of streams. If directional drilling, a minimum ten-foot clearance distance is required from drainage structures and a minimum of 5 feet below flowline of streams.

SC61 At points where the utility is placed under existing storm drainage, the trench will be backfilled with excavatable flowable fill up to the outside diameter of the existing pipe.

SC62 Unless specified otherwise, during non-working hours, equipment shall be located away from the job site or parked as close to the right of way line as possible and be properly barricaded in order not to have any equipment obstruction within the Clear Recovery Area. Also, during non-working hours, no parking or material storage shall be allowed along the shoulders of any state-maintained roadway.

SC63 No access to the job site, parking or material storage shall be allowed along or from the **Control of Access Roadway.**

SC64 Guardrail removed or damaged during construction shall be replaced or repaired by an NCDOT approved guardrail contractor to its original condition, meeting current NCDOT standards or as directed by the Division Engineer or their representative.

SC65 The resetting of the Control of Access fence shall be in accordance with the applicable NCDOT standard and as directed by the Division Engineer or their representative.

SC66 Right of Way monuments disturbed during construction shall be referenced by a registered Land Surveyor and reset after construction.

SC67 All Traffic signs moved during construction shall be reinstalled as soon as possible to the satisfaction of the Division Engineer or their representative.

SC68 Any utility markers, cabinets, pedestals, meter bases and services for meter reading required shall be as close to the Right of Way line as possible. If it is not feasible to install at or near Right of Way line, then written approval shall be obtained from NCDOT prior to installation.

SC69 Any sewer manholes, telephone vaults or valve vaults that are to be abandoned shall either be removed or broken down two (2) feet below subgrade, plugged and filled with suitable material.

SC70 Detection tape, where required by NCGS § 87-115 through § 87-130 of the Underground Utility Safety and Damage Prevention Act, shall be buried in the trench approximately 1 foot above the installed facility. Where conduit is installed in the right of way and is not of ferrous material, locating tape or detection wire shall be installed with the conduit.

SC71 All driveways disturbed during construction shall be returned to a state comparable with the condition of the driveways prior to construction.

SC72 Conformance with driveway permit review should be required in conjunction with this encroachment agreement. In the event there is a conflict between the driveway permit and the encroachment agreement, the District Engineer should resolve the conflict and notify the parties involved.

SC73 If the approved method of construction is unsuccessful and other means are required, prior approval must be obtained through the District Engineer before construction may continue.

Engineering

SC74 All traffic control, asphalt mixes, structures, construction, workmanship and construction methods, and materials shall be in compliance with the most-recent versions of the following resources: ASTM Standards, Manual on Uniform Traffic Control Devices, NCDOT Utilities Accommodations Manual, NCDOT Standard Specifications for Roads and Structures, NCDOT Roadway Standard Drawings, NCDOT Asphalt Quality Management System manual, **and the approved plans.**

SC75 Prior approval for any blasting must be obtained from the Division Engineer or their representative.

SC76 Regulator stations, metering stations, cathodic test stations, and anode beds are not permitted within NCDOT right of way. Header wires are permitted.

SC77 Non-Utility Communication and Data Transmission installations (ground mounted type or Small Cell pole-mounted type) must adhere to guidelines in the Utilities Accommodations Manual and, when located within municipal jurisdictions, are subject to review and approval by municipal ordinances and any additional municipal

approval for proximity to historic districts and landmarks. All wiring and related telecommunications work shall conform to the latest regulations by the Federal Communications Commission.

SC78 All wiring and related electrical work shall conform to the latest edition of the National Electrical Safety Code.

Location within R/W

SC79 All utility access points, such as manholes, vaults, handholes, splice boxes and junction boxes shall be located as close to the right of way line as possible and shall not be placed in the ditch line, side slopes of the ditches or in the pavement. All manholes, handholes, splice boxes, junction boxes and vaults and covers shall be flush with the ground when located within the vehicle clear zone. Slack loops for telecommunications in industry standard housing units shall be buried a minimum of 18 inches when buried or meet minimum NCDOT vertical and horizontal clearances when installed aerially.

SC80 Proposed manholes, handholes, valves or other appurtenances shall be installed flush to match the elevation of the existing ground and shall not be located in the existing ditch line, front slope of a ditch, or in a manner that would restrict the maintenance or flow of the existing ditch line.

SC81 Fire Hydrants shall be of the breakaway type. Fire Hydrant(s) shall be placed a maximum of 1 foot from the right-of-way line. (STD. 1515.02 in the NCDOT Roadway Standard Drawings).

SC82 Luminaire and/or utility poles and guy wires shall be set as close to the Right of Way line as practical and outside the Clear Zone in accordance with the latest version of the AASHTO Roadside Design Guide (See corresponding attachment) or made breakaway in accordance with the requirements of NCHRP Report 350. Any relocation of the utility poles from the original design due to Clear Zone requirements shall require a re-submittal for the utility design.

SC83 Luminaire and/or utility poles shall be set a minimum of 5'-6" behind face of any guardrail or otherwise sufficiently protected. However, standard placement may be reduced to 3'-6" behind face of guardrail when posts are spaced 3'-1 ½", or where speed limit is less than 55 MPH.

SC84 Hot box (aka ASSE 1060) or Safe-T-Cover type enclosures covering utility main pipe joints, backflow preventers, valves, vent pipes, cross connections, pumps, grinders, irrigation assemblies, transformers, generators, and other similar large appurtenances shall be located outside sight distance triangles and off of the NCDOT Right-of-Way.

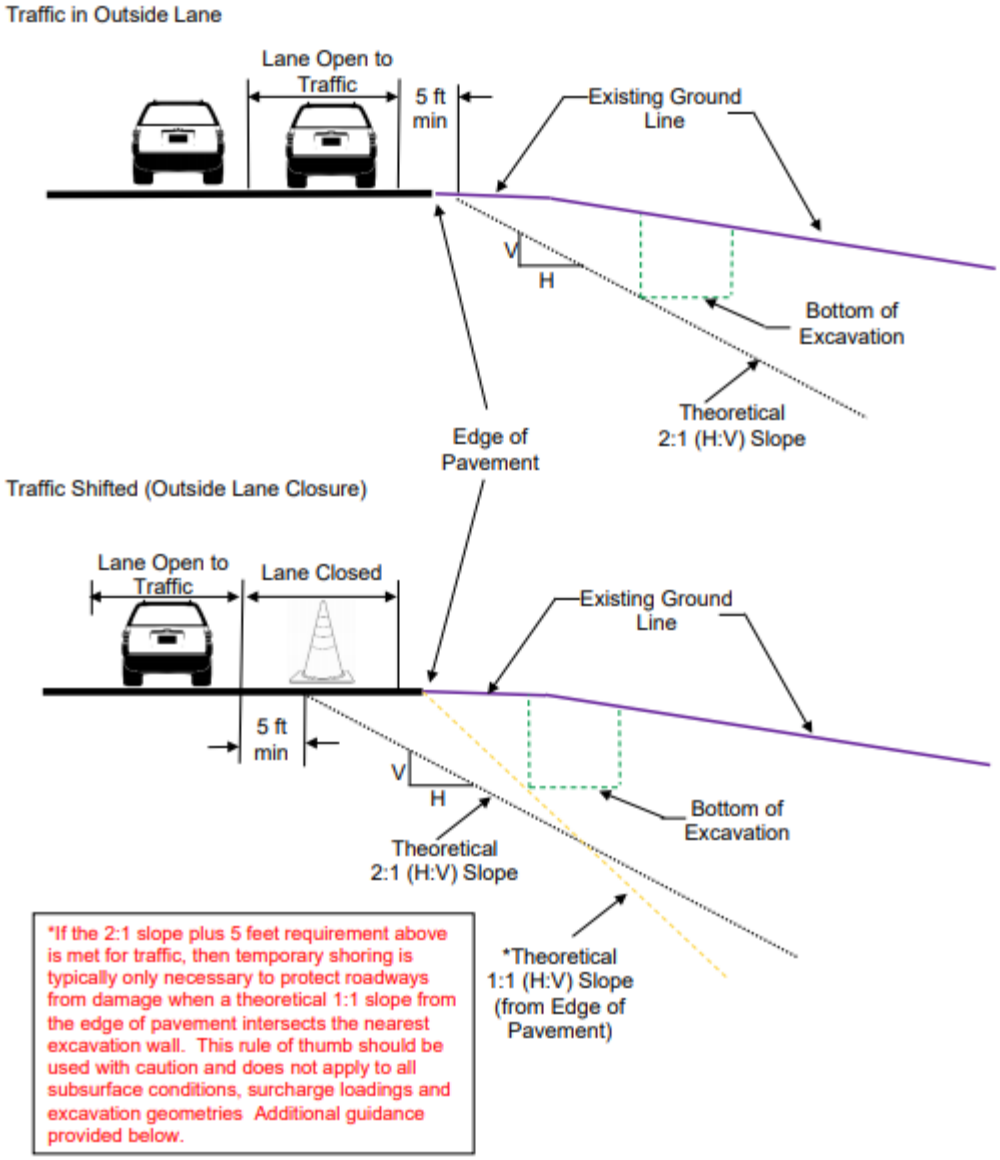
SC85 Sprinkler heads shall be located a minimum of 10 feet from the edge of pavement, edge of shoulder, or back of curb whichever is greater and shall be directed so that water does not spray or drain on the roadway surface, sidewalk, or passing vehicles at any time. Upon completion of the installation and prior to activation of the system, the Encroacher shall contact the District Engineer to schedule a test of the system to verify the spray pattern. Sprinkler systems shall not be operated during periods of high wind or freezing weather, or to the extent that the subgrade adjacent to the pavement structure becomes saturated. NCDOT reserves the right to require immediate termination and removal of any sprinkler system which in its judgement and opinion adversely affects safety, maintenance, or operation of the roadway.

Excavation

SC86 Excavation material shall not be placed on pavement.

SC87 It is the responsibility of the encroaching party or their contractor to prevent any mud/dirt from tracking onto the roadway. Any dirt which may collect on the roadway pavement from equipment and/or truck traffic on site shall be immediately removed to avoid any unsafe traffic conditions.

SC88 The utility shall be installed within 5 feet of the right of way line and outside the 5-foot minimum from travel lane plus theoretical 2:1 slope from the edge of pavement to the bottom of the nearest excavation wall for temporary shoring. If the 2:1 slope plus 5 feet requirement above is met for traffic, then temporary shoring is typically only necessary to protect roadways from damage when a theoretical 1:1 slope from the edge of pavement intersects the nearest excavation wall. This rule of thumb should be used with caution and does not apply to all subsurface conditions, surcharge loadings and excavation geometries. Situations where this 1:1 slope is not recommended include groundwater depth is above bottom of excavation or excavation is deeper than 10 feet or in Type B or C soils as defined by OSHA Technical Manual. Temporary shoring may be avoided by locating trenches, bore pits, and other excavations far enough away from the open travel lane, edge of pavement and any existing structure, support, utility, property, etc. to be protected. Temporary shoring is required when a theoretical 2:1 slope from the bottom of excavation will intersect the existing ground line less than 5 feet from the outside edge of an open travel lane as shown in the figure below or when a theoretical 2:1 slope from the bottom of excavation will intersect any existing structure, support, utility, property, etc. to be protected.



Temporary shoring shall be designed and constructed in accordance with current NCDOT Standard Temporary Shoring provisions (refer to https://connect.ncdot.gov/resources/Specifications/Pages/2018-Specifications-and-Special-Provisions.aspx and see SP11 R002).

a. Temporary excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by a licensed North Carolina Professional Engineer. Shoring plans and design calculations shall be submitted to the Division Engineer for review and approval prior to construction. (See NCDOT *Utilities Accommodations Manual* for more information on requirements for shoring plans and design calculations.) **Trench boxes shall not be accepted as temporary shoring and will not be approved for use in instances where shoring is required to protect the highway, drainage structure, and/or supporting pavement or structure foundation**.

b. All trench excavation inside the limits of the theoretical one-to-one slope, as defined by the policy, shall be completely backfilled and compacted at the end of each construction day. No portion of the trench shall be left open overnight. Any excavation that is not backfilled by the end of the workday must address any safety and traveling public concerns including accommodations for bicycles, pedestrians and persons with disabilities.

c. The trench backfill material shall meet the Statewide Borrow Criteria. The trench shall be backfilled in accordance with Section 300-7 of the latest *NCDOT Standard Specifications for Roads and Structures,* which basically requires the backfill material to be placed in layers not to exceed 6 inches loose and compacted to at least 95% of the density obtained by compacting a sample in accordance with AASHTO T99 as modified by DOT.

d. At the discretion of the Division Engineer, a qualified NCDOT inspector shall be on the site at all times during construction. The encroaching party shall reimburse NCDOT for the cost of providing the inspector. If NCDOT cannot supply an inspector, the encroaching party (not the utility contractor) should make arrangements to have a qualified inspector, under the supervision of a licensed North Carolina Professional Engineer, on the site at all times. The Professional Registered Engineer shall certify that the utility was installed in accordance with the encroachment agreement and that the backfill material meets the Statewide Borrow Criteria.

e. The length of parallel excavation shall be limited to the length necessary to install and backfill one joint of pipe at a time, not to exceed twenty-five (25) feet.

SC89 All material to a depth of 8 inches below the finished surface of the subgrade shall be compacted to a density equal to at least 100% of that obtained by compacting a sample of the material in accordance with AASHTO T99 as modified by the Department. The subgrade shall be compacted at a moisture content which is approximately that required to produce the maximum density indicated by the above test method. The contractor shall dry or add moisture to the subgrade when required to provide a uniformly compacted and acceptable subgrade. The option to backfill any trenches with dirt or either #57 stone or #78 stone with consolidation with a plate tamp and without a conventional density test may be pursued with the written consent of the District Engineer. If this option is exercised, then roadway ABC stone and asphalt repair as required will also be specified by the District Engineer.

Directional bore

SC90 Boring equipment will be provided of a type and size to facilitate boring in the local geologic conditions and shall be able to facilitate the encroachment work.

SC91 When Horizontal Directional Drilling (HDD) is used, the following stipulations apply:

a. Use drilling fluids as appropriate for the type soils but use of water alone is prohibited. Pump drilling fluids only while drilling or reaming. Directional boring using jetting with a Bentonite (or equivalent material) slurry is recommended. Monitor flow rates to match the amount leaving the bore hole and do not increase pressure or flow to free stuck drill heads, reamers or piping. Open cutting to retrieve stuck drill heads is not allowed without prior permission from the District Engineer.

b. The minimum depth shall adhere to the table below for transverse (under non-controlled access, partial controlled access, or limited controlled access roadway) installations and refers to maximum diameter of hole drilled and not the dimension of the carrier or encasement pipe.

Diameter of Drilled Hole (Backream)	Minimum Depth of Cover
2" to 10"	10 feet
>10" to 15"	12 times hole diameter (e.g. 11-inch hole means 11 feet minimum depth)
>15" to 36"	15 feet or greater

c. Under fully controlled access roadway installations, the minimum depth for transverse crossings shall be 15 feet under any pavement (ramps or thru lanes)

d. An overbore (backream diameter) shall not be more than 1.5 times the outside diameter of the pipe or encasement under any highway for pipes 12 inches in diameter or less. For pipes with outer diameter larger than 12 inches, the overbore may be no larger than outer diameter of pipe plus 6 inches. An overbore exceeding 1.5 times greater than the outside diameter of the pipe or encasement may be considered if the encroachment agreement includes a statement signed and sealed by a licensed North Carolina Professional Engineer indicating that an overbore in excess of 1.5 times the outside diameter of the pipe or encasement will appropriately arch and no damage will be done to the pavement or sub-grade.

e. Directional boring is allowed beneath embankment material in naturally occurring soil.

f. Any parallel installation utilizing the directional boring method shall be made at a minimum depth of five (5') feet (cover) below the ground surface and outside the theoretical 1:1 slope from the existing edge of pavement except where the parallel installation crosses a paved roadway.

g. All directional bores shall maintain ten (10) feet minimum (clear) distance from the nearest part of any structure, including but not limited to bridges, footings, pipe culverts or box culverts. Directional bores are not allowed beneath bridge footings, culvert wingwall footings, slope protection or retaining walls.

h. The tip of the drill string shall have a cutter head.

i. Detection wire shall be installed with non-ferrous material.

j. HDPE pipe installed by directional boring shall not be connected to existing pipe or fittings for one (1) week from the time of installation to allow tensional stresses to relax.

k. There shall be no bore pits within 20 feet of the signal pole foundation or the traffic control cabinet. There shall be no open cuts or trenching within 10 feet of the signal pole foundation and the traffic control cabinet.

Aerial clearances

SC92 Vertical clearance of overhead power and communication lines shall meet the National Electrical Safety Code requirements except the minimum vertical clearance shall be 18' for crossings over NCDOT roadways (24' over Fully Controlled Access roadways) and 16' for parallel installations.

SC93 In relation to the bridge, the utility line shall be located with minimum clearances as indicated on the attachment for **NCDOT Required Clearances for Aerial Installations by Encroachment Near Bridge Structures.**

Pavement Detail and Repair

SC94 The paving of roadways shall be in accordance with the latest version of NCDOT Standard Specifications, Sections 610, 1012 and 1020. The Contractor shall follow all procedures of the Quality Management System (QMS) for asphalt pavement - Maintenance Version (see https://connect.ncdot.gov/resources/Materials/MaterialsResources/2018%20QMS%20Asphalt%20Manual.pdf). The Contractor must adhere to all testing requirements and quality control requirements specified. The Contractor shall contact the NCDOT Division QA Supervisor prior to producing plant mix and make the Supervisor aware that the mix is being produced for a future NCDOT road. Only NCDOT approved mix designs will be acceptable. A Quality Control Plan shall be submitted (as Directed by the District Engineer) to the District Engineer's Office prior to asphalt production utilizing form QMS-MV1. Failing mixes and/or densities are subject to penalties including monetary payments or removal and replacement. To minimize traffic queuing in construction areas, the possibility of traffic detours may be considered when working on high traffic routes even if traffic control is used. The District Engineer may require traffic detours.

SC95 When paving beyond utility installation is involved, a Roadway certification report sealed by a Professional Engineer shall be submitted to the District Engineer's office indicating the following:

- Pavement thickness by type
- Pavement density, core and/or test locations
- Base thickness
- Base density
- Subgrade density

Test frequency and method shall be in conformance with the NCDOT *Materials and Tests Manual*. Test must be performed by a Certified Technician including name and Certification number on report.

SC96 "Potholing" pavement cores to expose existing utilities shall be made with an 18" diameter keyhole pavement core. Pavement core locations shall not be placed in the wheel path whenever possible. Vacuum excavation shall be utilized to expose underground utilities. Pavement cores shall be repaired within the same working day. The pavement core shall be retained and reused to fill the core hole.

The excavation shall be backfilled and compacted with select material to the bottom of the existing pavement structure or as indicated by the District Engineer. The retained core shall be placed in the hole and secured with a waterproof, mechanical joint. If the pavement core is damaged and cannot be re-used, the core may be replaced with the surface mix, S9.5B. The asphalt patch shall match the thickness of the existing asphalt or four inches, whichever is greater. All materials must be listed on the NCDOT Approved Products List (APL) found at: https://apps.ncdot.gov/vendor/approvedproducts/.

SC97 The minimum pavement design for pavement repair shall be according to NCDOT Standard Drawing 654.01 (https://connect.ncdot.gov/resources/Specifications/2018StandardRdwyDrawings/Division%2006%20Asphalt%20Bases%20and%20Pavements.pdf) and shall include a mechanical overlay extent to be a minimum of 25 feet each side of the pavement repair area OR as directed by the District Engineer. Any open cutting of pavement shall be repaired using the following method:

- Pavements shall be cut full depth and removed.
- After trench work is complete, the edges of the existing pavement along the trench shall be recut a minimum of 1' wider on each side of the trench. If the pavement is undermined, the edges of the existing pavement along the trench shall be recut to 1' beyond the undermined portion and the pavement removed. The design section stated below is to be placed in those areas.
- The pavement repair shall be performed using the following method and pavement design section:

- 11.0" B25.0C Asphalt Concrete Base Course (accomplished in 2 lifts minimum) according to NCDOT Standard 654.01.
- Mill the entire area a depth of 2.0", starting from 15' in front of the edge of the final pavement cut.
- Overlay entire area (a minimum 50' length mechanical overlay) with 2.0" S9.5C or S9.5B Asphalt Concrete Surface Course for a total asphalt depth of 13". Butt joints are required with no feathering of joints.

- All open cuts shall be backfilled, paved and traversable prior to removing lane closure.

SC98 Pavement cuts shall be repaired the same day the cuts are made.

SC99 Any pavement damaged because of settlement of the pavement or damaged by equipment used to perform encroachment work, shall be re-surfaced to the satisfaction of the District Engineer. This may include the removal of pavement and a 50' mechanical overlay. All pavement work and pavement markings (temporary and final) are the responsibility of the Encroaching Party. Centerline pavement markings shall be installed the same day resurfacing is accomplished. All other pavement markings shall be completed within five days of resurfacing.

SC100 For projects with open cuts and roadway improvements, a PE certification may be required. When applicable, upon completion of construction, a certification memo that has been signed and sealed as appropriate under General Statute 89C-16 by a North Carolina Professional Engineer or Registered Land Surveyor shall be submitted to the District Engineer prior to opening the access connection for public use. Supporting documentation shall be attached certifying that improvements for the driveway access(s) meet the approved plan and NCDOT standards. All documentation shall be dated and initialed by the contractor. Verification will include inspection reports, testing reports, or any supporting documentation and calculations. Verification will cover, but is not limited to, subgrade, pavement structure, drainage, and traffic control items.

Post Construction

Close out/ Inspection

SC101 The Encroaching party shall notify the District Engineer's office within 2 business days after construction is complete. The District Engineer may perform a construction inspection. Any deficiencies may be noted and reported to the encroaching party to make immediate repairs or resolve any issues to restore the right-of-way to a similar condition prior to construction, including pavement, signage, traffic signals, pavement markings, drainage, structures/pipes, or other highway design features.

SC102 At the discretion of the District Engineer, a final inspection report may be provided to the encroaching party upon satisfactory completion of the work.

SC103 A written acknowledgement of the completed work by the District Engineer's office begins the one-year warranty period associated with the performance bond.

SC104 If the actual construction differs from the approved plans associated with this encroachment, a copy of "as-built" plans shall be submitted to the District Engineer's office in a PDF format and in a current ESRI GIS format within 4 weeks of construction.

SC105 The encroaching party shall provide the North Carolina Turnpike Authority (NCTA) with an electronic copy of coordinate correct as-built plans within two weeks of installation completion. Failure to provide the as-built plans may jeopardize future approvals within NCTA right of way.

SC106 A copy (in PDF format) of the completed ground water analysis shall be given to the District Engineer, including detailed drawings of the "as-built" wells showing location, depth and water level in well.

ATTACHMENT FORM

NOTIFICATION FOR UTILITY / NON-UTILITY ENCROACHMENT WITHIN NCDOT R/W

Instructions for use:
This form must be completed in its entirety and submitted directly to the designated personnel in the District Engineer's office via email, fax or hand delivery a minimum of one week prior to construction for the encroachment. If the designated NCDOT personnel names are unknown by the person completing this form, please contact the District Engineer's office to determine that contact info.

Date: _____ Submitted by Name: _____

To: District Personnel Name: _____
District Personnel Email: _____
District Fax No.: _____

This notification is to inform you that we (encroaching party or their contractor) will begin construction work on the following project in a minimum of one week.

Encroachment number
(assigned by NCDOT) for the project: _____

Construction start date: _____

Approximate ending date: _____

Contact NCDOT inspector a minimum of 72 hrs. in advance to set-up Preconstruction meeting in the District Engineer's office or other location as directed by the District Engineer

Preconstruction meeting date & time: _____

Preconstruction meeting address: _____
_____

Type of project: _____
[Examples: power, telecommunication, water, sewer, gas, petroleum, other (describe)]

Contact Info for this project:

Contractor Company Name:
_____
Contractor Contact Name:
_____
Contractor Phone Number:
_____
Contractor Email:
_____

NCDOT Utility Inspector Name:
_____
NCDOT Utility Inspector Phone:
_____
NCDOT Utility Inspector Email:
_____
NCDOT Utility Project Manager Name:
_____
NCDOT Utility Project Manager Phone:
_____
NCDOT Utility Project Manager Email:
_____

Table 4-5 Suggested Clear-Zone Distances from Edge of Through Traveled Lane

Design Speed (mph)	Design ADT	Foreslopes			Backslopes		
		1V:6H or flatter	1V:5H to 1V:4H	1V:3H	1V:3H	1V:5H to 1V:4H	1V:6H or flatter
≤ 40	Under 750[c]	7 - 10	7 - 10	See Note b	7 - 10	7 - 10	7 - 10
	750 - 1500	10 - 12	12 - 14		10 - 12	10 - 12	10 - 12
	1500 - 6000	12 - 14	14 - 16		12 - 14	12 - 14	12 - 14
	Over 6000	14 - 16	16 - 18		14 - 16	14 - 16	14 - 16
45 - 50	Under 750[c]	10 - 12	12 - 14	See Note b	8 - 10	8 - 10	10 - 12
	750 - 1500	14 - 16	16 - 20		10 - 12	12 - 14	14 - 16
	1500 - 6000	16 - 18	20 - 26		12 - 14	14 - 16	16 - 18
	Over 6000	20 - 22	24 - 28		14 - 16	18 - 20	20 - 22
55	Under 750[c]	12 - 14	14 - 18	See Note b	8 - 10	10 - 12	10 - 12
	750 - 1500	16 - 18	20 - 24		10 - 12	14 - 16	16 - 18
	1500 - 6000	20 - 22	24 - 30		14 - 16	16 - 18	20 - 22
	Over 6000	22 - 24	26 - 32[a]		16 - 18	20 - 22	22 - 24
60	Under 750[c]	16 - 18	20 - 24	See Note b	10 - 12	12 - 14	14 - 16
	750 - 1500	20 - 24	26 - 32[a]		12 - 14	16 - 18	20 - 22
	1500 - 6000	26 - 30	32 - 40[a]		14 - 18	18 - 22	24 - 26
	Over 6000	30 - 32[a]	36 - 44[a]		20 - 22	24 - 26	26 - 28
65 - 70[d]	Under 750[c]	18 - 20	20 - 26	See Note b	10 - 12	14 - 16	14 - 16
	750 - 1500	24 - 26	28 - 36[a]		12 - 16	18 - 20	20 - 22
	1500 - 6000	28 - 32[a]	34 - 42[a]		16 - 20	22 - 24	26 - 28
	Over 6000	30 - 34[a]	38 - 46[a]		22 - 24	26 - 30	28 - 30

Notes:

a. When a site-specific investigation indicates a high probability of continuing crashes or when such occurrences are indicated by crash history, the designer may provide clear-zone distances greater than the clear zone shown in Table 4-5. Clear zones may be limited to 30 feet for practicality and to provide a consistent roadway template if previous experience with similar projects or designs indicates satisfactory performance.

b. Because recovery is less likely on the unshielded, traversable 1V:3H fill slopes, fixed objects should not be present in the vicinity of the toe of these slopes. Recovery of high-speed vehicles that encroach beyond the edge of the shoulder may be expected to occur beyond the toe of slope. Determination of the width of the recovery area at the toe of slope should consider right of way availability, environmental concerns, economic factors, safety needs, and crash histories. Also, the distance between the edge of the through traveled lane and the beginning of the 1V:3H slope should influence the recovery area provided at the toe of slope. While the application may be limited by several factors, the foreslope parameters that may enter into determining a maximum desirable recovery area are illustrated in Figure 4-5. A 10-foot recovery area at the toe of slope should be provided for all traversable, non-recoverable fill slopes.

c. For roadways with low volumes, it may not be practical to apply even the minimum values found in Table 4-5. Refer to RDG Chapter 12 for additional considerations for low-volume roadways and RDG Chapter 10 for additional guidance for urban applications.

d. When design speeds are greater than the values provided, the designer may provide clear-zone distances greater than those shown in Table 4-5.

Source: RDG Chapter 3 Section 3.1 Table 3-1

The above Clear-Zone table is from the *Roadway Design Manual*, November 2021.

NCDOT Required Clearances for Aerial Installations Near Bridge Structures

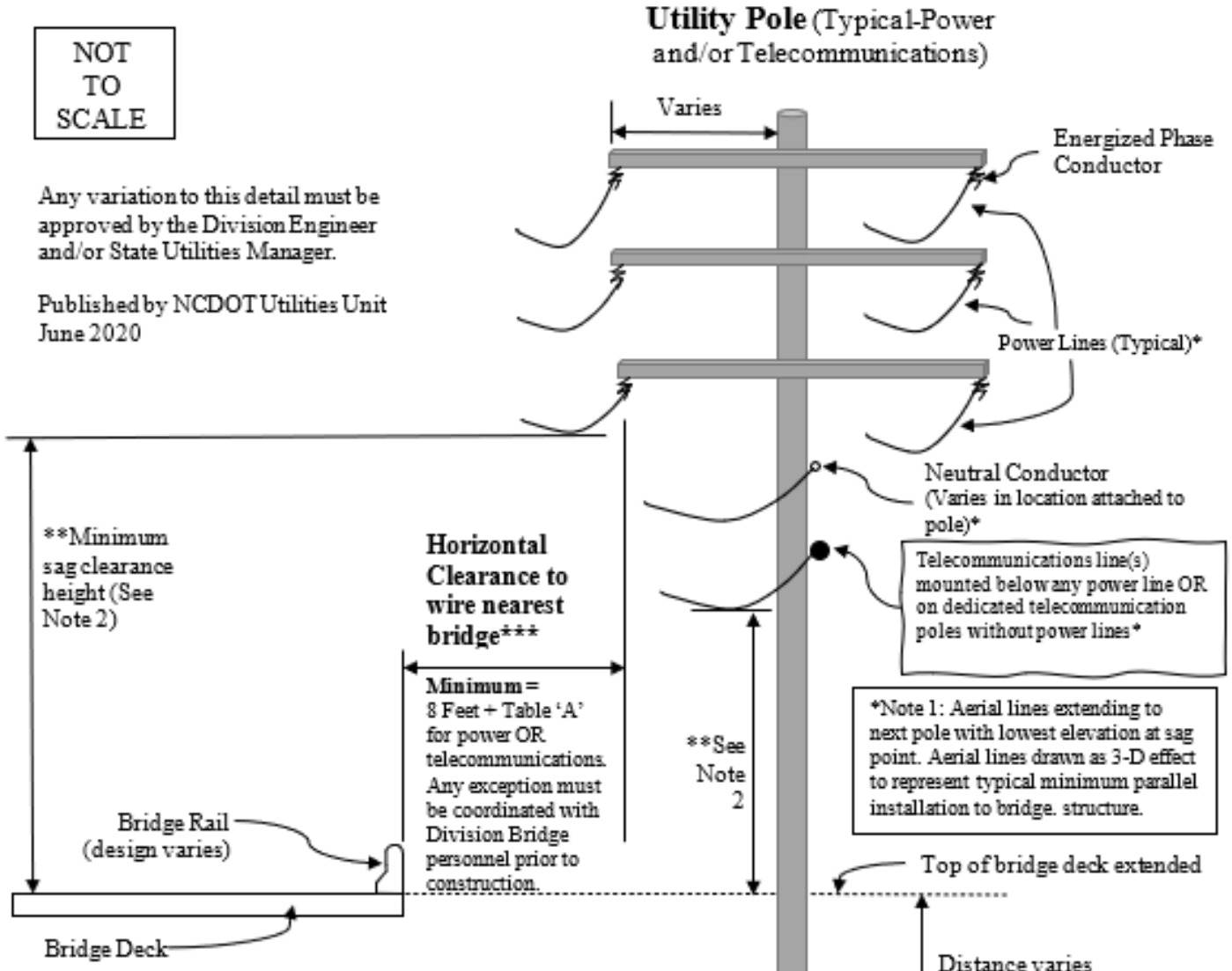


Table A – Minimum Horizontal Clearance Distances to POWER Lines (from OSHA)

VOLTAGE (nominal, kV, alternating current)	MINIMUM CLEARANCE (feet)
Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1000	45
Over 1000	As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution

***Note 3: HORIZONTAL CLEARANCE EXCEPTION. If vertical sag clearance height for power above bridge deck is ≥ 45 feet AND voltage is ≤ 350kV, then Minimum Horizontal Clearance may be reduced to 3 feet. Any telecommunications attachment to power pole allowed in this exception must have a minimum 25 feet sag clearance height above bridge deck.

VERIFICATION OF COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

(Check Appropriate Box)

☐ Permits from the N.C. Department of Environmental Quality and the U.S. Army Corp of Engineers are not required for this project. However, all applicable federal and state regulations have been followed.

☐ The required permits from the N.C. Department of Environmental Quality and the U.S. Army Corp of Engineers have been obtained for this project. Copies of the permits are attached.

☒ All applicable NPDES Stormwater Permit requirements have been or will be met for this project.

☐ The project is in compliance with all applicable sedimentation and erosion control laws and regulations.

Project Name: Raw Water Supply Improvements

Township: Leland County: Brunswick

Project Engineer: Ana Wadsworth Phone Number _____

Project Contact: Ana Wadsworth

Applicant's Name: Brunswick Regional Water and Sewer H2Go

P.E. Seal

Date Submitted: 8/6/24

NORTH CAROLINA PROFESSIONAL SEAL 042389 ENGINEER ANASTASIA M. WADSWORTH

DocuSigned by: Ana Wadsworth 4A5E08D981EB466...

8/6/2024

Form VCER-1
June 2016

Brunswick Regional Water and Sewer

August 9, 2024

Mr. Benjamin T. Hughes, P.E.
District Engineer
N.C. Department of Transportation
300 Division Drive
Wilmington, NC 28401

RE: NCDOT Encroachment Agreement
NCDOT ID #E033-010-24-00252 Raw Water Supply Improvements
Brunswick Regional Water and Sewer H2GO
Leland, North Carolina

Mr. Hughes,

Please accept this correspondence to satisfy the requested bonding assurances in lieu of providing Performance and Indemnity Bonds for the above referenced project.

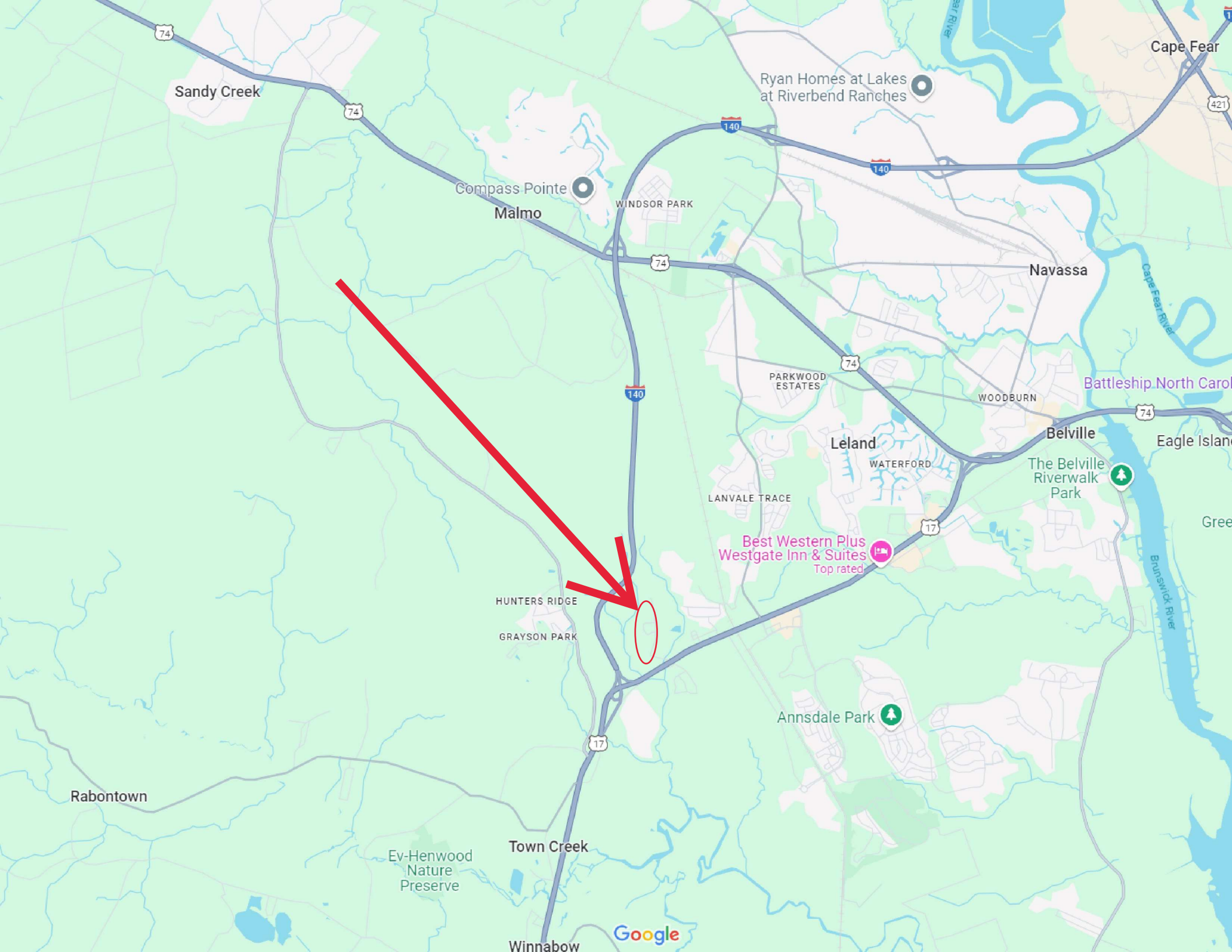
H2GO will not release the contractor's bonds until both H2GO and NCDOT are satisfied that the work performed under this encroachment agreement meets or exceeds NCDOT standards and policies.

If you have any questions, please contact me or Brian Johnson with The Wooten Company.

Sincerely,

Bob Walker
Executive Director
Brunswick Regional Water & Sewer H2GO
Office: 910-371-9949, ext 106
Mobile: 910-279-4581
bwalker@H2GOonline.com

Cc: Charles Davis, PE, The Wooten Company
Ana M. Wadsworth, PE, The Wooten Company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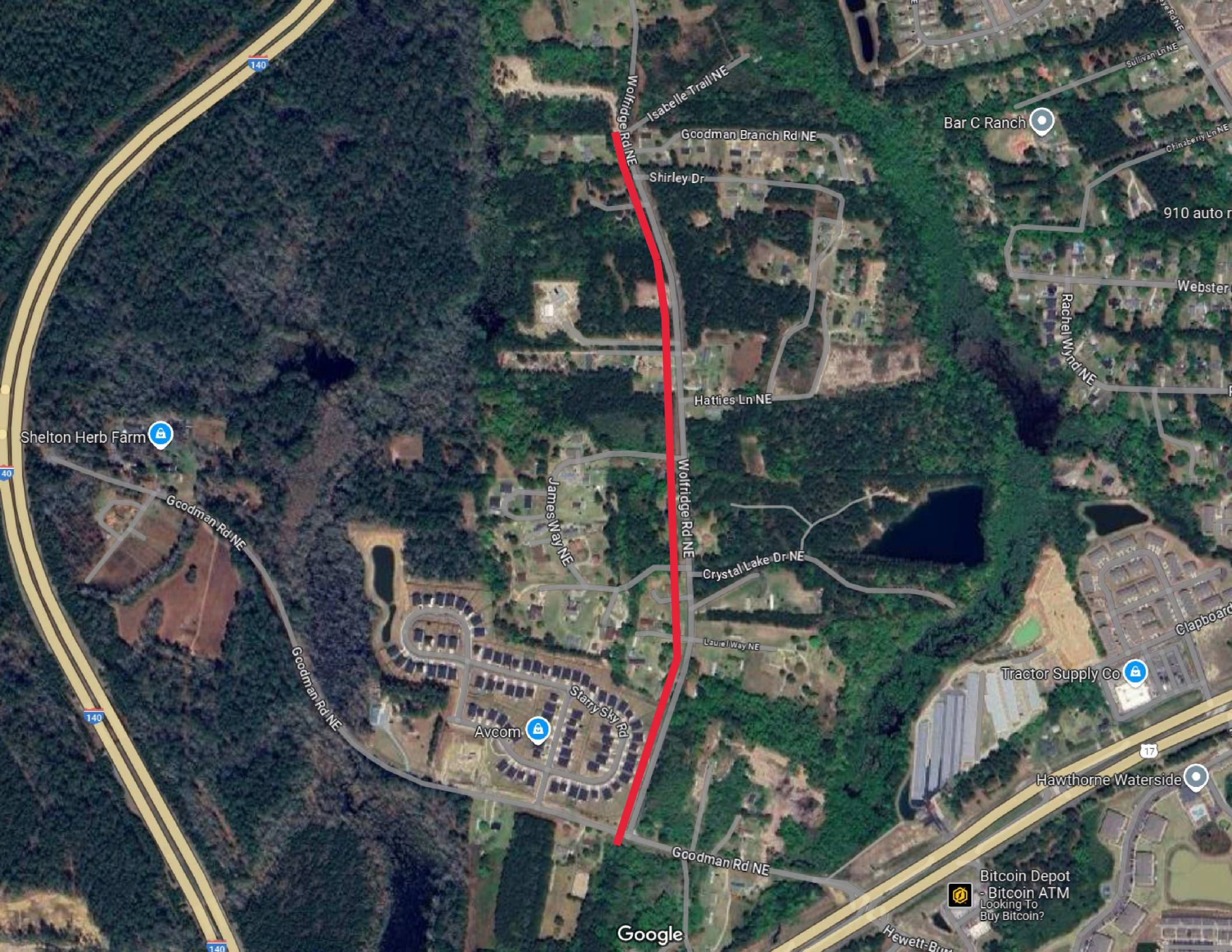
Ryan Homes at Lakes at Riverbend Ranches
Cape Fear
Compass Pointe
WINDSOR PARK
Malmo
Navassa
PARKWOOD ESTATES
WOODBURN
Battleship North Carol
Belville
Leland
Eagle Islan
WATERFORD
The Belville Riverwalk Park
LANVALE TRACE
Best Western Plus Westgate Inn & Suites
Top rated
HUNTERS RIDGE
GRAYSON PARK
Annsdale Park
Rabontown
Town Creek
Ev-Henwood Nature Preserve
Winnabow
Google
Cape Fear River
Brunswick River
74
140
17
421


Wolfridge Rd NE
Isabelle Trail NE
Goodman Branch Rd NE
Shirley Dr
Bar C Ranch
Sullivan Ln NE
Chinaberry Ln NE
910 auto r
Webster
Rachel Wynd NE
Hatties Ln NE
Shelton Herb Farm
James Way NE
Wolfridge Rd NE
Goodman Rd NE
Crystal Lake Dr NE
Laurel Way NE
Clapboard
Tractor Supply Co
Starry Sky Rd
Avcom
Goodman Rd NE
Hawthorne Waterside
Goodman Rd NE
Bitcoin Depot
- Bitcoin ATM
Looking To
Buy Bitcoin?
Google
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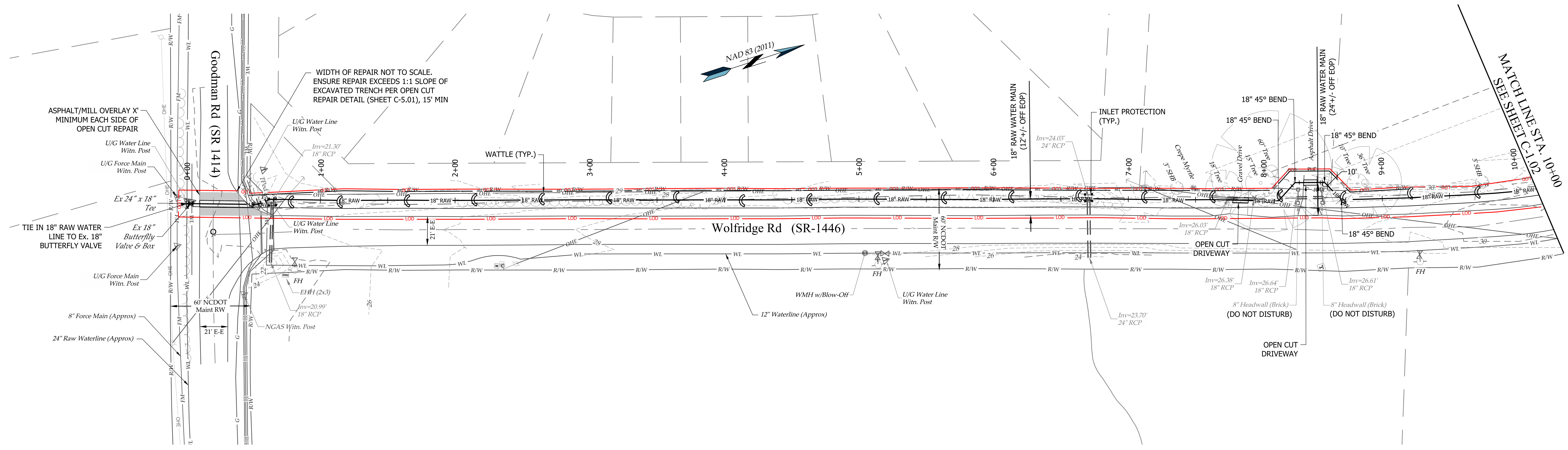

NOTES:

1. MAINTAIN MIN. 18" VERTICAL SEPARATION FROM EX. UTILITIES AND ENCASEMENTS UNLESS DIMENSIONED OTHERWISE.
2. MAINTAIN MIN. 24" VERTICAL SEPARATION FROM EX. STORM DRAINAGE CULVERTS UNLESS DIMENSIONED OTHERWISE.
3. LOCATE ALL EXISTING WATER SERVICES AND ADJUST AS NECESSARY.

SCALE: 1"=4' VERT.
SCALE: 1"=40' HORZ.

Know what's **below. Call** before you dig.
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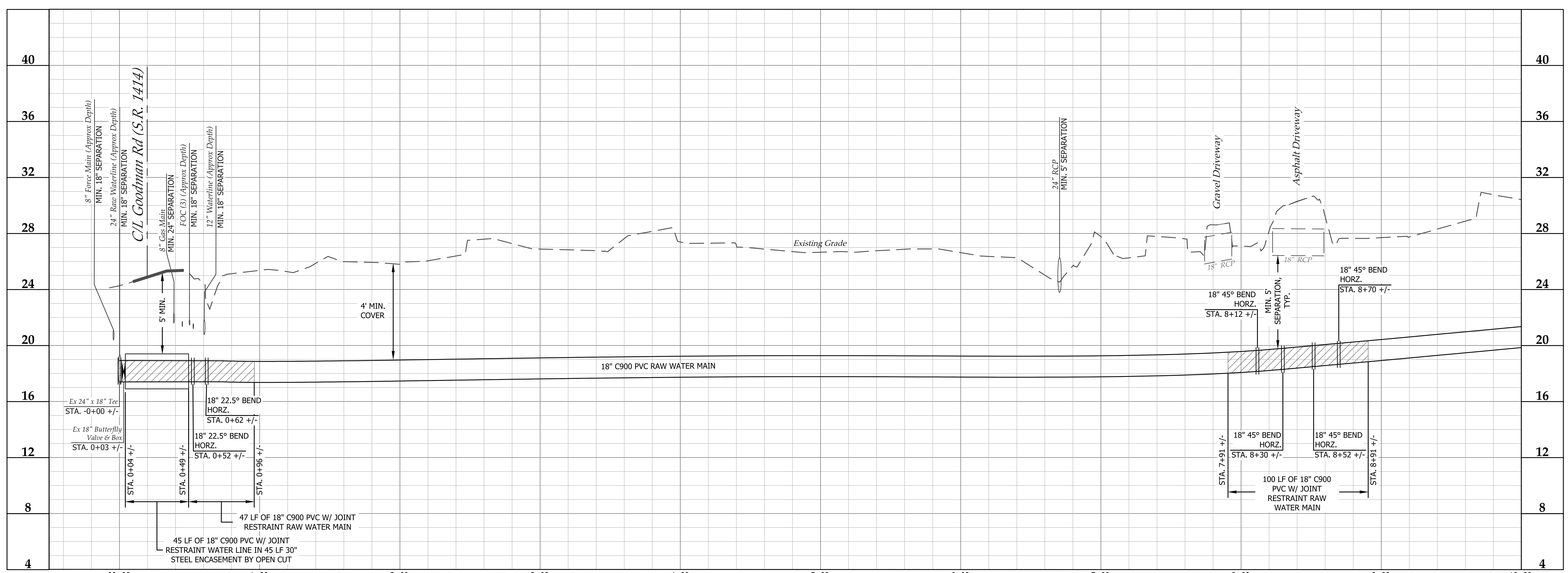
DIAL 811 or 1-800-632-4949 3 BUSINESS DAYS BEFORE DIGGING www.ncocc.org



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Wooten
120 North Boylan Avenue • Raleigh, NC 27603-1423
(919) 828-0531 • thewootencompany.com
License Number : F-0115

BRUNSWICK REGIONAL WATER AND SEWER H2GO
BRUNSWICK COUNTY NORTH CAROLINA
RAW WATER SUPPLY IMPROVEMENTS
18" RAW WATER MAIN
STA. 0+00 TO STA.10+00

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052389 ANASTASIA M. WADSWORTH 8/5/2024
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022630 CHARLES W. DAVIS 8/5/2024

ISSUED FOR:
BIDS
DATE: AUGUST 2024

DESIGNED BY: AMW
DRAWN BY: HDK
CHECKED BY: CWD
PROJECT NO.: 3081-BD

C-1.01

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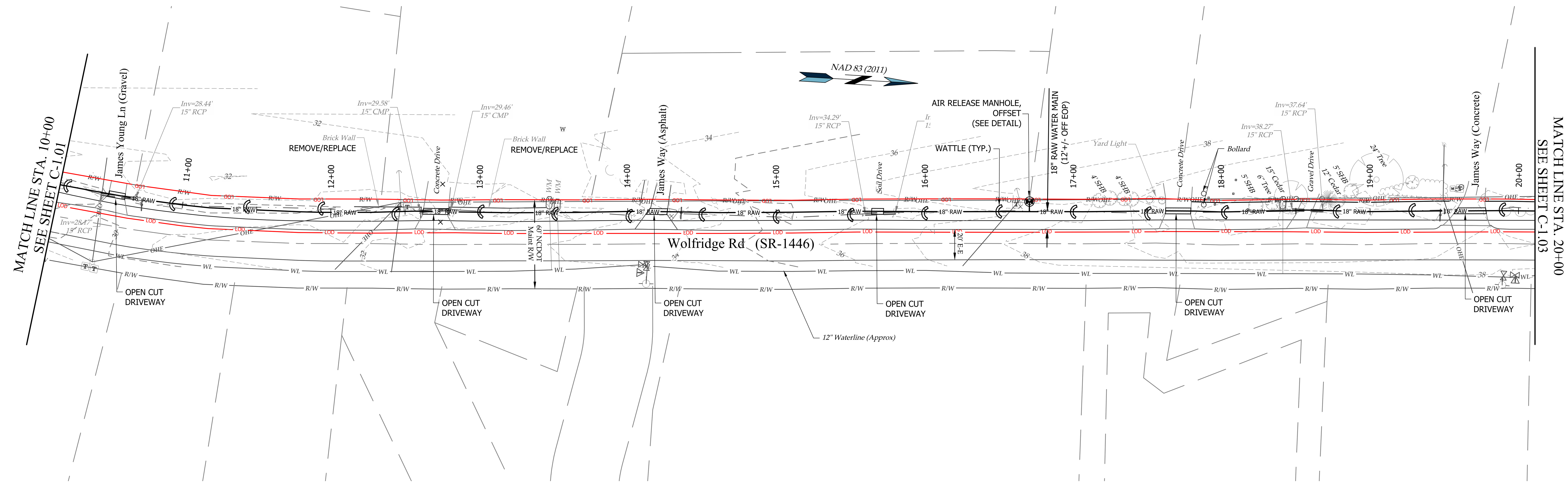

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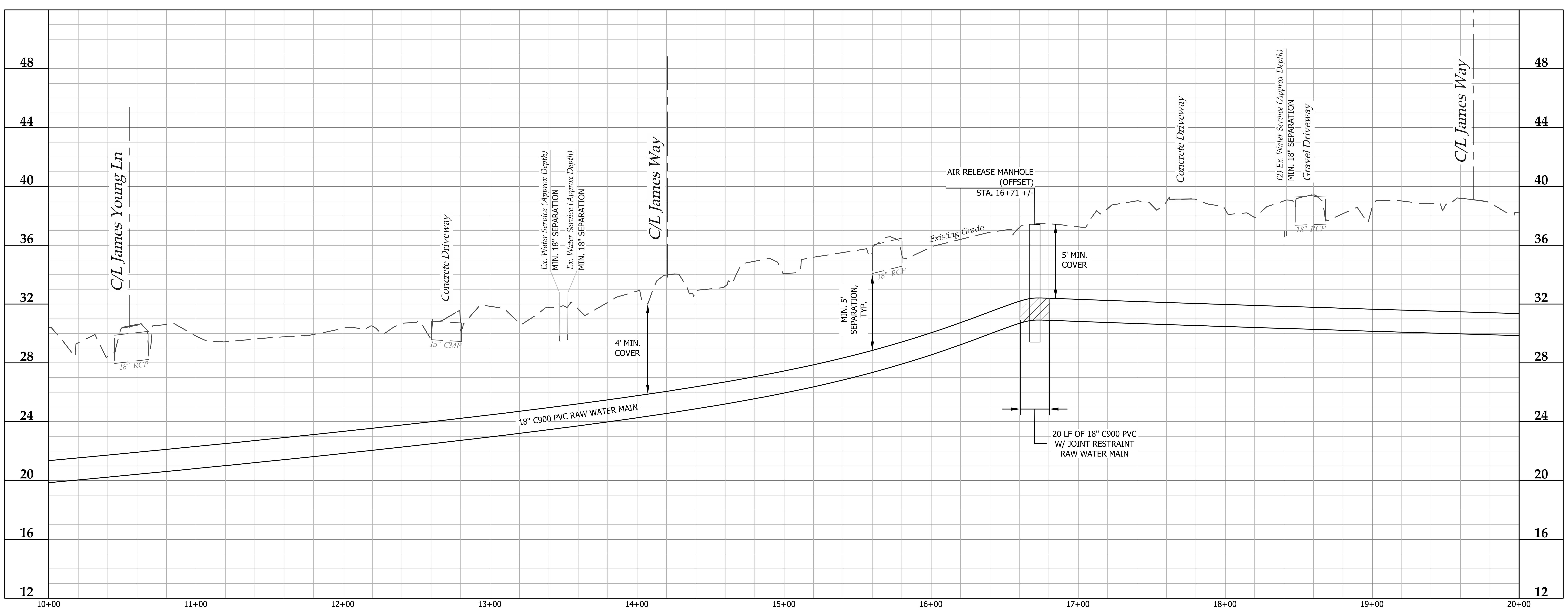

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — ANASTASIA M. WADSWORTH — 8/5/2024

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22350 — CHARLES W. DAVIS — 8/5/2024

ISSUED FOR:

BIDS

DATE: AUGUST 2024

DESIGNED BY:	AMW
DRAWN BY:	HDK
CHECKED BY:	CWD
PROJECT NO.:	3081-BD

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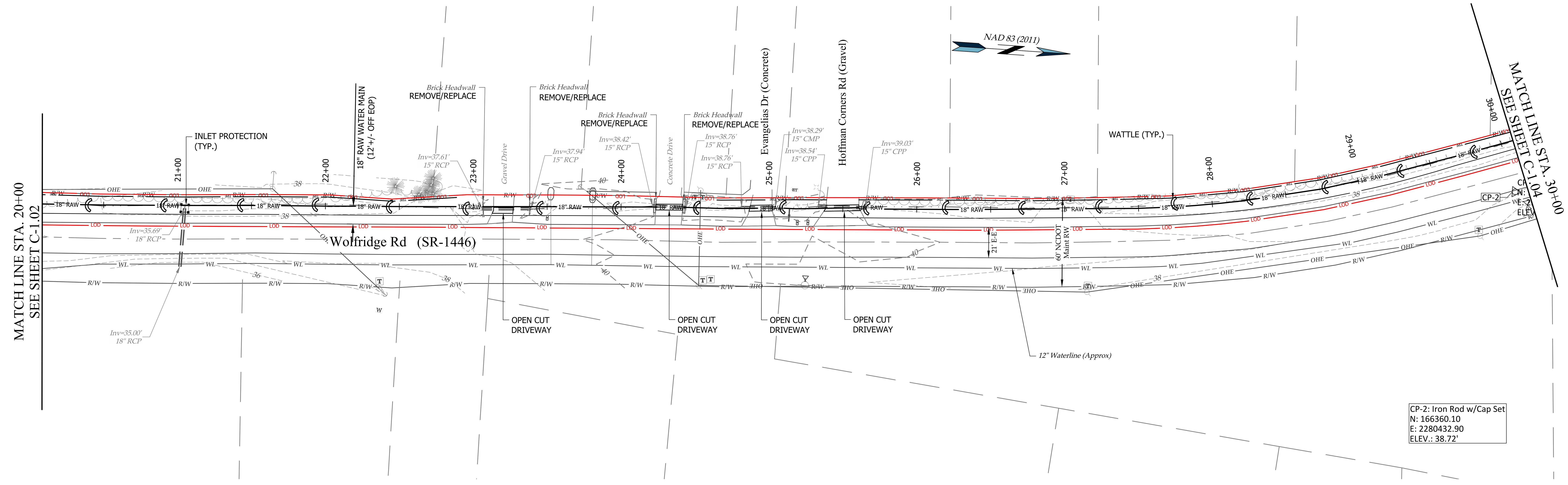

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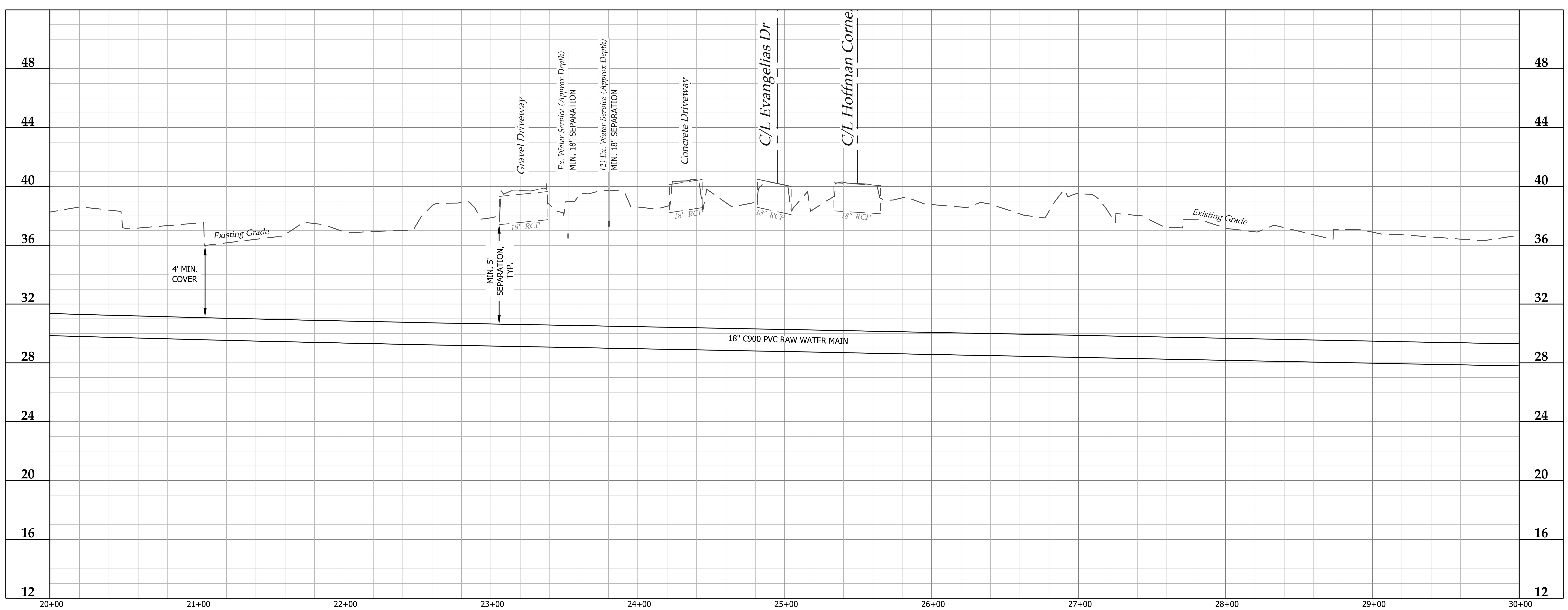

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8/5/2024

8/5/2024

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PROJECT NO.:	3081-BD

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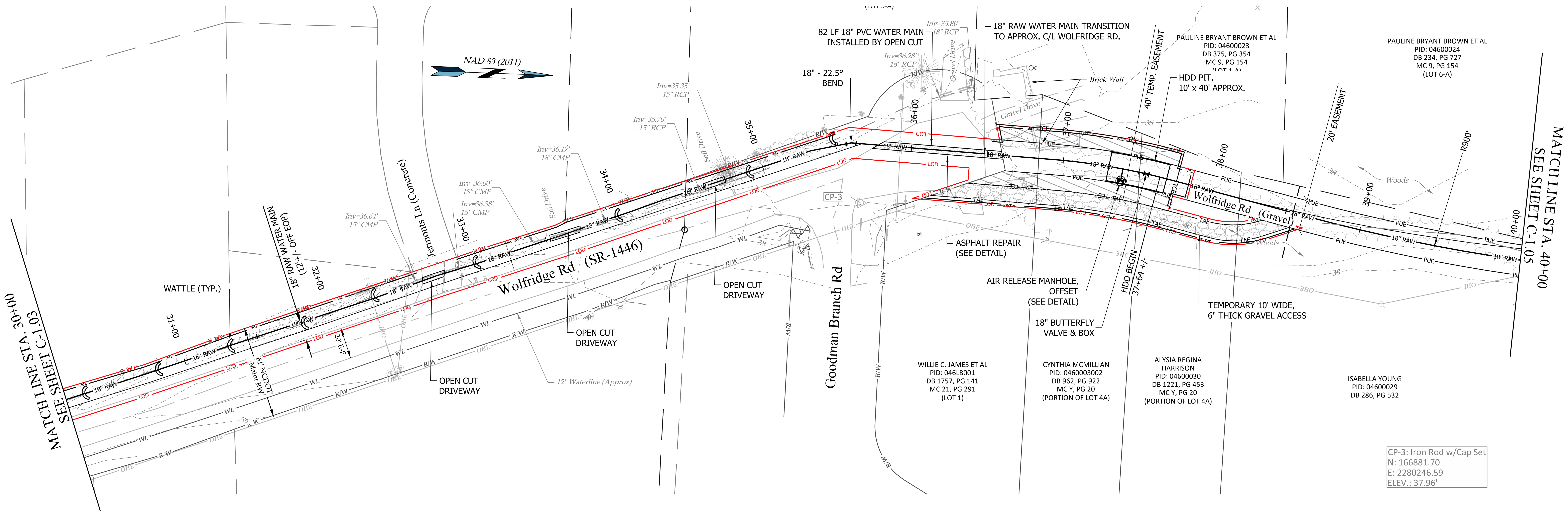

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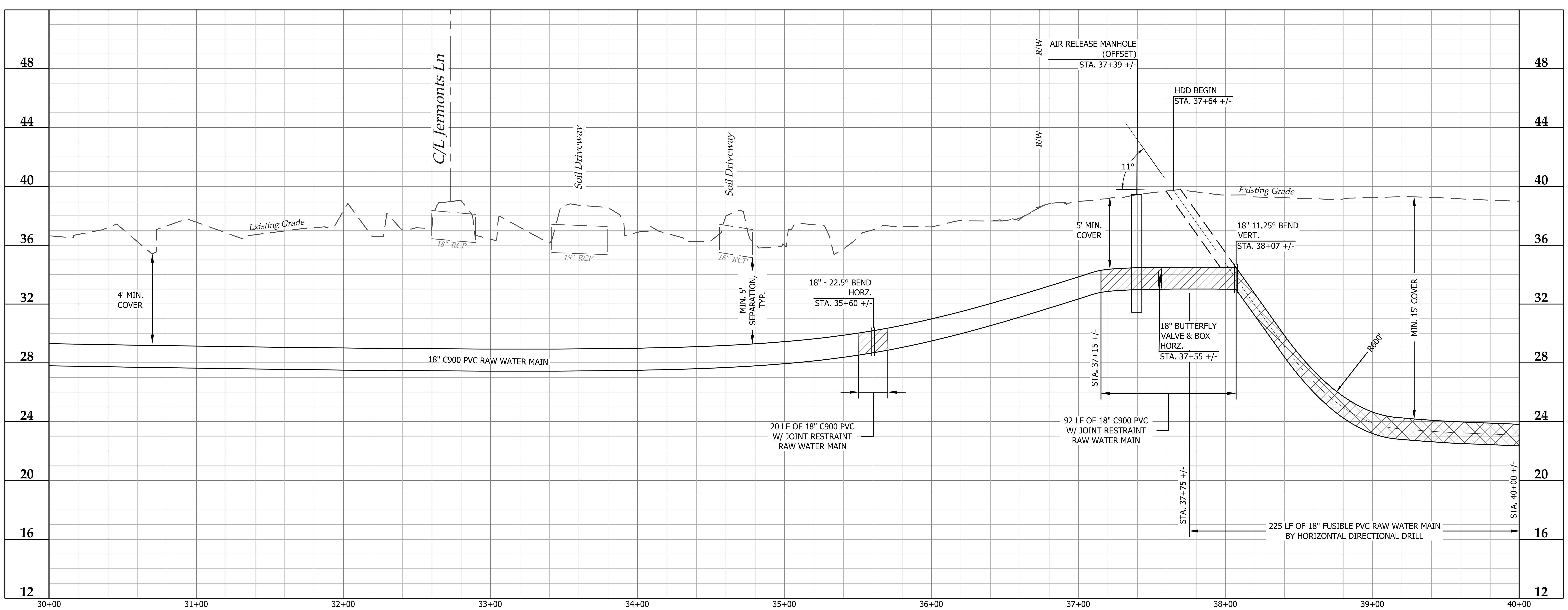

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047788 ANASTASIA M. WADSWORTH 8/5/2024
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022953 CHARLES W. DAVIS 8/5/2024

ISSUED FOR:
BIDS
DATE: AUGUST 2024

DESIGNED BY:	AMW
DRAWN BY:	HDK
CHECKED BY:	CWD
PROJECT NO.:	3081-BD

C-1.04

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BID FORM

PROJECT: Raw Water Supply Improvements

BID FROM: _____

TABLE OF ARTICLES

ARTICLE 1 BID RECIPIENT

1.01 This Bid is Submitted To:

Brunswick Regional Water and Sewer H2GO
146 Gregory Road, N.E.
Belville, NC 28451

1.02 Undersigned bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with the Owner in the form included in the Bidding Documents to perform the Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in the Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Advertisement and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addenda: _____

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to federal, state and local Laws and Regulations that may affect cost, progress, and performance, of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in SC-4.02, and (2) reports and drawings of Hazardous Environmental Conditions, if any, that have been identified in SC-4.06 as containing reliable "technical data".

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

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

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

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

J. Bidder will submit written evidence of its authority to do business in the state where the Project is located not later than the date of its execution of the Agreement.

ARTICLE 4 BIDDER'S CERTIFICATION

4.01 Bidder further represents that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

A. For Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated below.

THIS AREA INTENTIONALLY LEFT BLANK

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Estimated Price
1	Mobilization	LS	1		
2	Soil Testing Allowance	LS	1	$35,000.00	$35,000.00
3	Sediment and Erosion Control	LS	1		
4	6” Perforated Underdrain	LF	6,000		
5	Clearing and Grubbing	AC	13.5		
6	Clearing Only	AC	5.3		
7	Earthwork/Grading for Access Road and Well Sites	LS	1		
8	Seeding and Mulching	AC	2.5		
9	Undercut of Unsuitable Material- Roadway & Well Sites	CY	19,000		
10	12-inch CABC Stone- Access Road	SY	24,900		
11	6-inch CABC Stone- Temporary Access	SY	250		
12	4-inch CABC Stone- Access Road Shoulder	SY	5,000		
13	Woven Geotextile Fabric (Type 4B)- Access Road & Well Sites	SY	28,500		
14	Signage-Access Road	EA	1		
15	Removable Bollards	EA	3		
16	20’ Wide Swing Gate- Access Road	EA	1		
17	15” HP Storm Drain Pipe	LF	124		
18	18” HP Storm Drain Pipe	LF	197		
19	24” HP Storm Drain Pipe	LF	98		
20	30” HP Storm Drain Pipe	LF	99		
21	48” HP Storm Drain Pipe	LF	34		
22	60” HP Storm Drain Pipe	LF	46		
23	71”x 47” Dual Arch CMP Culvert	LF	48		
24	12" PVC C900 Restrained Joint Raw Water Main	LF	350		
25	18" PVC C900 Raw Water Main	LF	3,471		
26	18" PVC C900 Restrained Joint Raw Water Main	LF	3,929		
27	Pre-Cast NCDOT Concrete Endwall	EA	2		
28	Class A Rip-Rap	SY	24		
29	Class B Rip-Rap	SY	48		

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Estimated Price
30	Class 1 Rip-Rap	SY	92		
31	Class 2 Rip-Rap	SY	154		
32	Trench Rock Excavation	CY	100		
33	30" Steel Encasement with 18" Restrained Joint Raw Water Main by Open Cut	LF	45		
34	Asphalt Pavement Patching	SY	150		
35	Asphalt Driveway Repair	SY	90		
36	Gravel Driveway Repair	SY	100		
37	Concrete Driveway Repair	SY	150		
38	Undercut of Unstable Pipe Foundation	CY	300		
39	Select Backfill	CY	600		
40	12" Raw Water Valve and Box	EA	2		
41	18" Raw Water Valve and Box	EA	12		
42	Air Release Valve in Manhole	EA	5		
43	Offset Air Release Valve in Manhole	EA	2		
44	18” x 18” Junction Box for Fiber Optic	EA	26		
45	Concrete Anti-Seep Collar	EA	18		
46	HDPE to PVC Transition at 70” x 30” Duke Energy Junction Structure	EA	68		
47	18" Fusible PVC C900 Horizontal Directional Drill Raw Water (Sta. 37+75 to 56+75)	LS	1		
48	18" Fusible PVC C900 Horizontal Directional Drill Raw Water (Sta. 102+67 to 122+27)	LS	1		
49	18" Fusible PVC C900 Horizontal Directional Drill Raw Water (Sta. 123+41 to 142+72)	LS	1		
50	18" Fusible PVC C900 Horizontal Directional Drill Raw Water (Sta. 153+48 to 171+53)	LS	1		
51	18" Fusible PVC C900 Horizontal Directional Drill Raw Water (Sta. 178+47 to 190+95)	LS	1		
52	2x 4” SDR 13.5 HDPE Electrical Conduit by HDD	LS	1		
53	2x 4” SDR 13.5 HDPE Electrical Conduit by Open Cut	LS	1		

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Estimated Price
54	4x 4” SDR 13.5 HDPE Electrical Conduit by HDD	LS	1		
55	4x 4” SDR 13.5 HDPE Electrical Conduit by Open Cut	LS	1		
56	1 x 2” SDR 13.5 HDPE Fiber Optic Conduit by HDD	LS	1		
57	1 x 2” SDR 13.5 HDPE Fiber Optic Conduit by Open Cut	LS	1		
58	Restrained Joint DI Raw Water Fittings	LB	24,830		
59	Concrete Driveway Apron	SY	40		
Existing Well Sites 1-5					
60	Lower Well 01P Submersible Pump	VLF	20		
61	Lower Well 02P Submersible Pump	VLF	78		
62	Lower Well 03P Submersible Pump	VLF	55		
63	Lower Well 04P Submersible Pump	VLF	75		
64	Lower Well 05P Submersible Pump	VLF	50		
Well Site No. 6					
65	Well 06P – Pilot Hole and Geophysical Logging	VLF	403		
66	Well 06P – 22-inch Outer Casing	VLF	100		
67	Well 06P – 12-inch Inner Casing	VLF	313		
68	Well 06P – 1.25-inch Water Level Pipe	VLF	379		
69	Well 06P – 12-inch Well Screen	VLF	75		
70	Well 06P – 12-inch Tailpiece/Cellar	VLF	5		
71	Well 06P - 24-Hour Testing, Water Quality Sampling, & Driller’s Report	LS	1		
72	Well 06B - Pilot Hole and Geophysical Logging	VLF	580		
73	Well 06B – 22-inch Outer Casing	VLF	100		
74	Well 06B – 12-inch Inner Casing	VLF	463		
75	Well 06B – 1.25-inch Water Level Pipe	VLF	454		
76	Well 06B – 12-inch Well Screen	VLF	100		
77	Well 06B – 12-inch Tailpiece/Cellar	VLF	5		
78	Well 06B - 24-Testing, Water Quality Sampling, & Driller’s Report	LS	1		

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Estimated Price
79	Well Site 6 Submersible Pumps Installation, Well Head Completion, Electrical Building, Site Work, Piping and Grading	LS	1		
Well Site No. 7					
80	Well 07P - Pilot Hole and Geophysical Logging	VLF	415		
81	Well 07P – 22-inch Outer Casing	VLF	100		
82	Well 07P – 12-inch Inner Casing	VLF	318		
83	Well 07P – 1.25-inch Water Level Pipe	VLF	309		
84	Well 07P – 12-inch Well Screen	VLF	75		
85	Well 07P – 12-inch Tailpiece/Cellar	VLF	5		
86	Well 07P - 24-Hour Testing, Water Quality Sampling & Driller's Report	LS	1		
87	Well 07B - Pilot Hole and Geophysical Logging	VLF	600		
88	Well 07B – 22-inch Outer Casing	VLF	100		
89	Well 07B – 12-inch Inner Casing	VLF	473		
90	Well 07B – 1.25-inch Water Level Pipe	VLF	464		
91	Well 07B – 12-inch Well Screen	VLF	100		
92	Well 07B – 12-inch Tailpiece/Cellar	VLF	5		
93	Well 07B - 24-Hour Testing, Water Quality Sampling, & Driller's Report	LS	1		
94	Well Site 7 Submersible Pumps Installation, Well Head Completion, Electrical Building, Site Work, Piping and Grading	LS	1		
Well Site No. 8					
95	Well 08P (08P) - Pilot Hole and Geophysical Logging	VLF	420		
96	Well 08P – 22-inch Outer Casing	VLF	100		
97	Well 08P – 12-inch Inner Casing	VLF	325		
98	Well 08P – 1.25-inch Water Level Pipe	VLF	316		
99	Well 08P – 12-inch Well Screen	VLF	75		
100	Well 08P – 12-Inch Tailpiece/Cellar	VLF	5		
101	Well 08P - 24-Hour Testing, Water Quality Sampling and Driller's Report	LS	1		
102	Well 08B - Pilot Hole and Geophysical Logging	VLF	600		

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Estimated Price
103	Well 08B – 22-inch Outer Casing	VLF	100		
104	Well 08B – 12-inch Inner Casing	VLF	468		
105	Well 08B – 1.25-inch Water Level Pipe	VLF	459		
106	Well 08B – 12-inch Well Screen	VLF	100		
107	Well 08B – 12-inch Tailpiece/Cellar	VLF	5		
108	Well 08B - 24-Hour Testing, Water Quality Sampling and Driller's Report	LS	1		
109	Well Site 8 Submersible Pumps Installation, Well Head Completion, Electrical Building, Site Work, Piping and Grading	LS	1		
				TOTAL UNIT PRICE BID	

B. Unit Prices have been computed in accordance with paragraph 11.03.B of the General Conditions.

C. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents. Determinations of actual quantities and classification are to be made by Engineer as provided in paragraph 9.07 of the General Conditions.

D. For the following Alternates as selected by the Owner for inclusion in the Project as follows:

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Alternate Bid Price
110	**Bid Alternate No. 1**: Incentive to complete Article 6.03.C.3 (i.e. Milestone Event 3) in 180 days in lieu of 240 days	LS	1		
47a	**Bid Alternate No. 2:** 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 37+75 to 56+75)	LS	1		
48a	**Bid Alternate No. 2:** 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 102+67 to 122+27)	LS	1		
49a	**Bid Alternate No. 2:** 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 123+41 to 142+72)	LS	1		
50a	**Bid Alternate No. 2:** 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 153+48 to 171+53)	LS	1		
51a	**Bid Alternate No. 2:** 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 178+47 to 190+95)	LS	1		

ARTICLE 6 TIME OF COMPLETION

6.01 Bidder agrees that the Work will be completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

6.03 Milestone Dates

A. The following principal events shall be completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within the days indicated below after the date when the Contract Time commences to run. In accordance with paragraph 6.02 above as liquidated damages for delay (but not as penalty) Contractor shall pay Owner the amounts indicated below for each day that expires after the time specified below for completion and readiness for final payment.

B. The Contractor will be issued a conditional Notice to Proceed prohibiting access to the project beyond Station 37+55 until such time as the USACE wetlands permit is obtained. For planning purposes, the Contractor should assume the permit will be in place by January 15, 2025, at which time the Engineer will issue a non-restrictive Notice to Proceed.

C. Milestone Event

Milestone Event	Calendar Days	Liquidated Damages
1. Complete lowering of Wells 01P through 05P per Section 01100 - Summary of Work – Paragraph 1.03.A.1	45	$1,000
2. Complete construction ready for operation the 18-inch raw water main (Sta. 0+00 to Sta. 37+55) per Section 01100 – Summary of Work – Paragraphs 1.03.A.2 through 1.03.A.4.	90	$1,000
3. Complete construction and place into operation the 18-inch raw water main (Sta. 0+00 to Sta. 59+62 and Sta. 100+00 to 102+47) and Well Site 6 per Section 01100 – Summary of Work – Paragraphs 1.03.A.6 through 1.03.A.13.	240**	$1,000
4. Complete construction and place into operation the 18-inch raw water main (Sta. 102+47 to Sta. 153+11) and Well Site 7 per Section 01100 – Summary of Work – Paragraphs 1.03.A.14 through 1.03.A.16.	300**	$750
5. Complete construction and place into operation the remaining 18-inch raw water main (Sta. 153+11 to Sta. 203+40) and Well Site 8 per Section 01100 – Summary of Work – Paragraphs 1.03.A.17 through 1.03.A.23.	360**	$750

** from the date the Contractor receives unrestricted access to the entire project, estimated to occur by January 15, 2025, upon receipt of the USACE wetlands permit.

ARTICLE 7 ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid. Failure to provide the documentation with the bid may be grounds for rejection of the bid.

A. Required Bid security in the form of a Bid Bond (EJCDC No. C-430) or Certified Check (circle type of security provided).

B. In accordance with GS 143-128.2(c), Bidder shall identify on its bid the minority businesses that it will use on the project and the total dollar value of the bid that will be performed by the minority businesses and list the good faith efforts (Affidavit A) made to solicit participation. A bidder that will perform all of the work with its own workforce may submit and Affidavit (B) to that effect in lieu of the Affidavit (A) required above.
   1. Identification of Minority Business Participation
   2. Affidavit A, listing of Good Faith Efforts; or Affidavit B, Intent to Perform Contract with Own Workforce.

C. In accordance with GS 64-26(a), Bidders shall submit the E-Verify Affidavit to document that the work authorization of their employees has been verified through E-Verify. The Affidavit shall also document that the Bidders subcontractors comply with E-Verify.

D. Iran Divestment Act Affidavit.

E. A tabulation of Subcontractors required to be identified in the Bid.

7.02 Submit the Bidder's Checklist as provided in the bidding documents with the bid submittal. The Checklist shall be completed and included as the first page of the submittal.

7.03 After the bid opening the Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low Bidder, the Bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

A. An Affidavit (C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the goal established by the Owner and indicated in the Instruction to Bidders, paragraph Minority Participation Goals. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort; or

B. Affidavit (D) of its good faith effort to meet the goal. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

7.04 In accordance with GS 143-128 the Single Prime Contractor must identify the Contractors, if any, selected for the following subdivision of work:

A. General Construction

Name: _____

Address: _____

_____

N.C. License No.: _____

B. HVAC Construction

Name: _____

Address: _____

_____

N.C. License No.: _____

C. Plumbing Construction

Name: _____

Address: _____

_____

N.C. License No.: _____

D. Electrical Construction

Name: _____

Address: _____

_____

N.C. License No.: _____

E. Well Driller

Name: _____

Address: _____

_____

N.C. License No.: _____

7.05 Bidder understands that if this Bid is accepted by the Owner, Bidder shall not substitute for the subcontractors named in the Bid Documents except as allowed in the Supplementary Conditions.

ARTICLE 8 DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 BID SUBMITTAL

9.01 Contractor's License

A. Number: _____

B. Classification: _____

C. Limitation: _____

Employer's Tax ID No.: _____

Business Address

_____

_____

Phone No.:_____

Fax No.:_____

E-Mail Address:_____

9.02 This Bid Submitted by:

An Individual

Name: _____
(Type or print)

By: _____
(Individual's Signature)

Doing Business As: _____
(Type or print)

A Partnership

Partnership Name: _____

The Organization and Internal Affairs of the Partnership are governed by the laws of the State of: _____

By: _____
(Signature of general partner, attach evidence of authority to sign)

Name: _____
(Type or print)

Title: _____
(Type or print)

Attest: _____
(Signature of Corporate Secretary)

A Corporation

Corporation Name: _____

State of Incorporation: _____

Type (General Business, Profession, Service, Limited Liability):

_____

By: _____
(Signature, attach evidence of authority to sign)

Name: _____
(Type or print)

Title: _____
(Type or print)

Attest: _____ Corporate Seal
(Signature of Corporate Secretary)

Date of Qualification to do business in North Carolina is _____.

Limited Liability Company – LLC

Name of LLC: _____

Name of State under whose Laws the Limited Liability Company was formed: _____

By: _____
(Signature of Manager)

Name: _____
(Type or print)

Title: _____
(Type or print)

END OF DOCUMENT

SECTION 01230

ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements for Alternates.

1.02 RELATED SECTIONS

A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all Work:
   1. Section 00410 Bid Form
   2. Section 01100 Summary of Work
   3. Section 01270 Unit Prices
   4. Section 02447 Horizontal Directional Drill for Pipe Installation

1.03 DEFINITIONS

A. Alternate: An Alternate is an item of work or equipment that the Owner is requesting separate bids for as indicated on the Bid Form and defined in the Contract Documents. The Alternates may be "Added To", "Deducted From" or “In Lieu of Unit Price Bid Items As Designated In” the Base Bid as indicated on the Bid Form.

1.04 QUALITY ASSURANCE

A. Coordinate related Work and modify adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.

B. A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements described under each Alternate.
   1. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items incidental to and required for a complete installation as part of the Alternate.

1.05 SELECTION AND AWARD OF ALTERNATES

A. Bid award will be evaluated on the total of the base bid and any of the alternates as selected by the Owner to the extent that project funds are available.

B. Following the award of the Contract, the Engineer shall prepare and distribute to each Bidder notification of the status of each Alternate. Notification shall indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. It shall also include a complete description of all negotiated modifications to Alternates.

C. Accepted Alternates will be identified in the Owner-Contractor Agreement.

1.06 SCHEDULE OF ALTERNATES

A. Alternate No. 1
   1. This alternate shall include, but not be limited to, the following major components, unless indicated otherwise:

a. Line Item 110: Incentive to complete Article 6.03.C.3 (i.e. Milestone Event 3) in 180 days in lieu of 240 days.

2. The following Sections have work that is directly related to this Alternate. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
   1) Section 00410 Bid Form
   2) Section 01100 Summary of Work

B. Alternate No. 2

1. This alternate shall include, but not be limited to, installation of 24" DR 9 HDPE Raw Water Main in lieu of 18" Fusible C900 PVC Raw Water Main (Line Items 47, 48, 49, 50, and 51) for the Horizontal Directional Drills:
   a. Line Item 47a: 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 37+75 to 56+75).
   b. Line Item 48a: 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 102+67 to 122+27).
   c. Line Item 49a: 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 123+41 to 142+72).
   d. Line Item 50a: 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 153+48 to 171+53).
   e. Line Item 51a: 24" DR 9 HDPE Horizontal Directional Drill Raw Water (Sta. 178+47 to 190+95).
2. The following Sections have work that is directly related to this Alternate. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
   a. Section 00410 Bid Form
   b. Section 01270 Unit Prices
   c. Section 02447 Horizontal Directional Drill for Pipe Installation

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 02447

HORIZONTAL DIRECTIONAL DRILLING
FOR PIPE INSTALLATION

PART 1 GENERAL

1.01 SCOPE

A. Provide complete installation of fusible polyvinylchloride pipe (FPVCP) or high density polyethylene (HDPE) pressure pipe by horizontal directional drilling (HDD) as indicated on the drawings.

B. Work shall include, but not be limited, to the following:
   1. General site and access preparation necessary for construction operations.
   2. Assembly of FPVC or HDPE pipe.
   3. Hydrostatic testing of the pipe prior to installation (Contractor's option).
   4. Erection of drilling equipment.
   5. Drilling of a small diameter pilot hole.
   6. Reaming the pilot hole as specified herein to a diameter suitable for installation of the pipe.
   7. Pulling the assembled pipe through the reamed hole along with the detector wire.
   8. Hydrostatic testing of pipe after installation.
   9. Cleanup and final restoration of work area.

1.02 RELATED SECTIONS

A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of the work:
   1. Section 02230 Clearing and Grubbing
   2. Section 02315 Trenching for Utilities
   3. Section 02510 Water Distribution System

1.03 REFERENCES

A. Publications are referred to in the text by basic designation only.
   1. American Society for Testing and Materials (ASTM)
      a. D1784 Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
      b. D2152 Test Method for Degree of Fusion of Extruded PVC Pipe and Molded Fittings by Acetone Immersion
      c. D3350 Polyethylene Plastics Pipe and Fittings Materials
   2. American Water Works Association (AWWA)
      a. B300 Hypochlorites
      b. B301 Liquid Chlorine
      c. C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
      d. C105 Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids
      e. C111 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
      f. C150 Thickness Design of Ductile Iron Pipe
      g. C151 Ductile-Iron Pipe, Centrifugally Cast, for Water
      h. C153 Ductile-Iron Compact Fittings, 3-inch through 24-inch and 54-inch through 64-inch, for Water Service

i. C600 Standard for Installation of Ductile Iron Water Mains and Their Appurtenances
j. C651 Disinfecting Water Mains
k. C900 PVC Pressure Pipe for Water Distribution
l. C905 PVC Pressure Pipe for Water Distribution and Transmission
m. C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 – 63 inch for Water Distribution and Transmission
n. M23 Manual of Supply Practices PVC Pipe – Design and Installation

3. National Sanitation Foundation (NSF) Standards
   a. 14 Plastic Piping Components and Related Materials
   b. 61 Drinking Water System Components – Health Effects

1.04 SUBMITTALS

A. Submit the following in accordance with Section, Submittal Procedures:
   1. Affidavit of Compliance: Affidavit shall attest that supplied products conform to the referenced standard and this specification and that all tests set forth in each applicable referenced publication have been performed and that all test requirements have been met. Submit for each of the following materials:
      a. FPVC Pipe.
      b. HDPE Pipe.
   2. Catalog Data: Submit manufacturer's standard drawings or catalog cuts for the following. Clearly indicate equipment to be furnished for the Project including options to be provided.
      a. FPVC Pipe.
      b. HDPE Pipe.
   3. Test Reports: Submit for the following:
      a. Field test including calibration report and pressure testing.
   4. Description of the arrangement of directional drilling including method of monitoring and controlling line and grade, schedule, and procedure of installation.
   5. Provide pipe manufacturer’s recommended pull-back pressure to be utilized during installation.
   6. Log sheets as required herein.
   7. Provide certified as-built drawing (plan and profile), including beginning and ending locations of drill, upon completion of drilling.

1.05 QUALITY ASSURANCE

A. Pipe manufacturer shall have an established quality control program responsible for inspecting and testing incoming and outgoing material.

B. Manufacturer shall maintain permanent Quality Control (QC) and Quality Assurance records.

C. Contractor shall employee personal that have a minimum of ten (10) similar installations of FPVC or HDPE by horizontal directional drilling as appropriate for the installation. Fusing technician shall be qualified by the pipe supplier to install the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project

D. Directional drilling method shall be mechanical with fluid assistance. Pneumatic, water jetting, jacking, and boring method will not be permitted.

E. Install pipe by directional drilling in accordance with the best industry practice, manufacturer’s recommendations and the Contract Documents.

F. Equipment used to monitor pull-back pressure shall be calibrated prior to each installation.

G. Pipe and fusion services shall be warrantied for a minimum of one year from date of acceptance.

PART 2 PRODUCTS

2.01 GENERAL

A. Products with surfaces intended to be in contact with the drinking water shall be certified and listed in accordance with NSF 61 for potable drinking water and bear the NSF seal on each section of pipe.

2.02 MATERIALS

A. Fusible Polyvinylchloride Pipe
   1. Fusible polyvinylchloride pipe shall conform to AWWA C900 or AWWA C905. Testing shall be in accordance with AWWA standards.
   2. Pipe shall be DIPS standard dimensions with a minimum pressure rating of 235 psi (DR18) and the size as indicated on the Drawings.
   3. Piping shall be made from a PVC compound conforming to cell classification 12454 per ASTM D1784.
   4. Fusible polyvinylchloride pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
   5. Fusible polyvinylchloride pipe shall be manufactured in standard 40 ft. and 45 ft. nominal lengths.
   6. Fusible polyvinylchloride pipe shall be blue in color for raw water use.
   7. Pipe generally shall be marked per industry standards, and shall include as a minimum:
      a. Nominal pipe size
      b. PVC
      c. Dimension Ratio
      d. Pipe legend or stiffness designation, or AWWA pressure class
      e. AWWA Standard designation number
      f. Extrusion production-record code
      g. Trademark or trade name
      h. Cell Classification 12454 and/or PVC material code 1120 may also be included.
   8. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults.

B. High Density Polyethylene (HDPE) Pressure Pipe: The pipe shall conform to AWWA C906 and the following requirements:
   1. Outside diameter shall conform to iron pipe size for 24-inch and above.
   2. Material for pipe manufacturing shall be PE 4710 high density polyethylene (HDPE) meeting ASTM D3350 cell classification 445574 C/E.
   3. Pipe shall be pressure class PC 250 with a standard dimension ratio (DR) of 9.
   4. Fittings shall be made of the same material meeting the same requirements as the pipe unless otherwise noted.

PART 3 EXECUTION

3.01 GENERAL

A. Investigate the subsurface conditions at the crossing location.

B. Provide water for the drilling process.

C. Handle pipe in accordance with manufacturer's recommendation.

D. Utilize pipe rollers during layout and pull-back operations to prevent excess sagging of the pipe. Pipe rollers shall be of sufficient size to fully support the weight of the pipe while being hydro-tested before installation and during pull-back operations.

E. Directional drilling procedure shall include provisions to guard against electrical shock such as ground mats, ground cables, hot boots and gloves. Drilling equipment shall include an alarm system capable of detecting electrical current as it nears electrical lines.

F. Maintain log sheets for drilling fluid pressure, flow rate, drill thrust pressure, pull-back pressure, drill head torque and drill head location plots at 20 foot intervals.

G. Drilling fluids shall be inert and of no risk to the environment. No fluid will be utilized that does not comply with permit requirements and environmental regulations. Drilling fluid should remain in the bore hole to increase the stability of the surrounding soil and to reduce the drag on the pulled pipe.

H. No additional payment will be made for failed attempts.

3.02 DIRECTIONAL DRILLING

A. General
   1. Drill pilot hole along the path shown on the Drawings to the following tolerances:
      a. Vertical Location - Plus or minus 1 foot
      b. Horizontal Location - Plus or minus 6 feet.
   2. At the completion of the pilot hole drilling, provide a tabulation of coordinates referenced to the drilled entry point which accurately describes the location of the pilot hole.
   3. Perform reaming diameter to 1.25 to 1.5 times the outside diameter of the pipe being installed. Prepare pipe to facilitate connection to the remainder of the pipeline being installed.
   4. Use care to protect the pipe from scarring, gouging, or excessive abrasion.
   5. Method of connection between HDD pipe and other pipe materials shall be as indicated on the Drawings.
   6. Pipe shall be deflected within the tolerances as provided by the pipe manufacturer.
   7. For drills under structural conditions (i.e., roadways), perform reaming diameter to 2 inches maximum greater than outside diameter of the pipe being installed. If larger size is necessary, provide statement from North Carolina Professional Engineer stating that “an overbore in excess of 2-inches will arch and no damage will be done to pavement or sub-grade”.

B. Fusible Polyvinylchloride (FPVC) pipe
   1. General
      a. Installation guidelines from the pipe supplier shall be followed for all installations.

b. The fusible polyvinylchloride pipe will be installed in a manner so as not to exceed the recommended bending radius guidelines.
c. Where fusible polyvinylchloride pipe is installed by pulling in tension, the recommended maximum safe pulling force, established by the pipe supplier, shall not be exceeded

2. Handling and Storage
   a. Pipe shall be offloaded, loaded, installed, handled, stored and stacked per the pipe supplier's guidelines. These guidelines include compliance with the minimum recommended bend radius and maximum safe pull force for the specific pipe being used.
   b. The general best practices of the industry per AWWA M23 shall also be observed.
3. Fusion Joints
   a. Fusible polyvinylchloride pipe lengths shall be assembled in the field with butt-fused joints. The fusion technician shall follow the pipe supplier's guidelines for this procedure. All fusion joints shall be completed as described in this specification.
4. Fusion Process
   a. Fusible polyvinylchloride pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.
   b. Fusible polyvinylchloride pipe will be fused by qualified fusion technicians holding current qualification credentials for the pipe size being fused, as documented by the pipe supplier.
   c. Pipe supplier's procedures shall be followed at all times during fusion operations.
   d. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine, which utilizes a current version of the pipe supplier's recommended and compatible software.
   e. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. This includes requirements for safety, maintenance, and operation with minor modifications made for PVC.
5. Installation:
   a. Pull heads for use with FPVCP
      1) Pipe pull heads shall be utilized that employ a positive through-bolt design assuring a smooth wall against the pipe cross-section at all times.
      2) Pipe pull heads shall be specifically designed for use with fusible polyvinylchloride pipe, and shall be as recommended by the pipe supplier.
   b. Pipe shall be fused prior to insertion, if the site and conditions allow, into one continuous length.
   c. Contractor shall handle the pipe in a manner that will not over-stress the pipe prior to insertion. Vertical and horizontal curves shall be limited so that the pipe does not bend past the pipe supplier's minimum allowable bend radius, buckle, or otherwise become damaged. Damaged portions of the pipe shall be removed and replaced.
   d. The pipe entry area shall be graded as needed to provide support for the pipe and to allow free movement into the bore hole.
      1) The pipe shall be guided into the bore hole to avoid deformation of, or damage to, the pipe.

2) The fusible polyvinylchloride pipe may be continuously or partially supported on rollers or other Owner and Engineer approved friction decreasing implement during joining and insertion, as long as the pipe is not over-stressed or critically abraded prior to, or during installation.
3) A swivel shall be used between the reaming head and the fusible polyvinylchloride pipe to minimize torsion stress on the pipe assembly.

e. Buoyancy modification shall be at the sole discretion of the Contractor, and shall not exceed the pipe supplier's guidelines in regards to maximum pull force or minimum bend radius of the pipe. Damage caused by buoyancy modifications shall be the responsibility of the Contractor.
f. Once pull-back operations have commenced, the operation shall continue without interruption until the pipe is completely pulled through the bore hole.
g. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, or movement and distortion of surface features. Any damages caused by the Contractor's operations shall be corrected by the Contractor.
h. Once installed, the contractor shall make connections to the open cut pipe by means of mechanical joint fittings, taking care to correct horizontal or vertical alignment with the fittings rather than the Fusible PVC.

C. High Density Polyethylene (HDPE) Pressure Pipe
1. Joints at the ends of directionally drilled runs shall be fusion bonded to the adjacent pipe section. Mechanical couplings are not permitted. Fusion bonding may be accomplished through the use of butt fusion or electrofusion coupling techniques as specified.
2. Use care to protect the pipe from scarring, gouging, or excessive abrasion.
3. Method of connection between HDPE pipe and other pipe materials shall be as indicated on the Drawings.
4. Pipe shall be deflected within the tolerances as provided by the pipe manufacturer.
5. Allow one week from the time of installation for pipe to be connected other piping systems to allow tensional stresses to relax.

3.03 CLEAN UP

A. Upon completion of the pipe installation, backfill the drilling pit and receiving pit as specified.

B. Properly remove and dispose of drilling fluid and spoil material in compliance with relative environmental regulations, right-of-way and work space agreements under permit requirements. Drilling fluid returns at locations other than the entry and exit points shall be minimized. Immediately clean up drilling fluid that inadvertently surfaces.

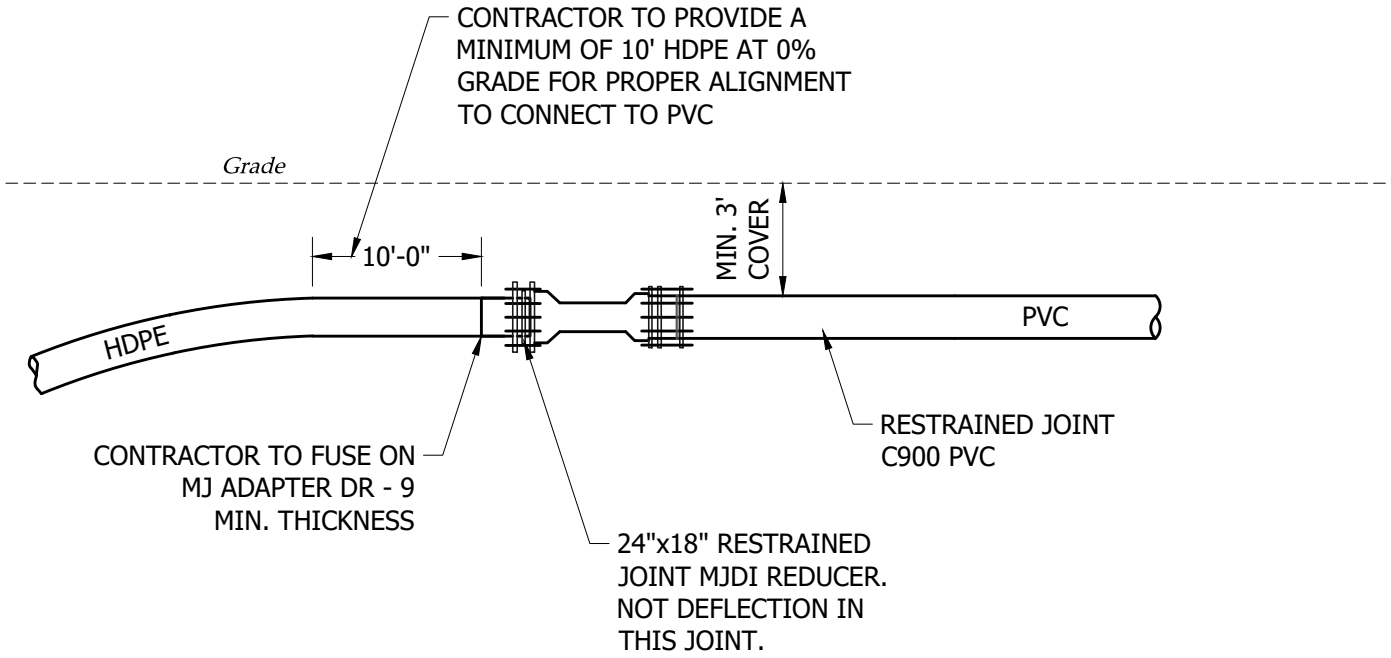
C. Using available technology, Contractor shall provide a certified as-built drawing with profile indicating the depth from existing grade to the top of HDD pipe from the beginning to the end of the HDD construction.

3.04 FIELD TESTS

A. Prior to Installation Contractor may elect, at his expense, to hydrostatically test or perform a low pressure air test on the pipe line to determine the integrity of the joints. This shall not be considered an alternative to the testing required after installation.

B. Following installation test pipe in accordance with pressure testing in Section 02510, Water Distribution System.

END OF SECTION



1 / BD-01

H.D.P.E. TO D.I.P. TO PVC TRANSITION (TYP.)

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 022531 ENGINEER CHARLES W. DAVIS

Signed by: Charles W. Davis 943EA9DD156D4E5...

9/9/2024

Wooten
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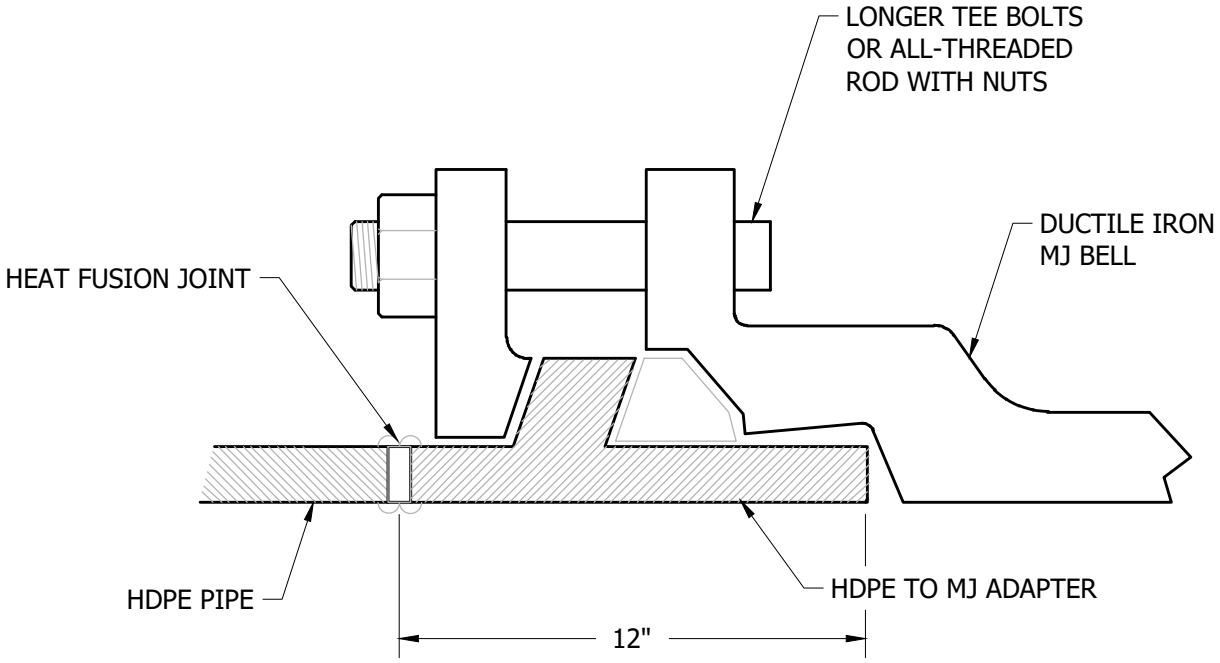
thewootencompany.com
License Number F-0115

BRUNSWICK REGIONAL WATER AND SEWER H2GO
BRUNSWICK COUNTY NORTH CAROLINA

RAW WATER SUPPLY IMPROVEMENTS

ADDENDUM No. 2 – INSTALLATION DETAIL

Designed By:	CWD
Drawn By:	EBM
Checked By:	CWD
Project No.:	3081-BD
	SEPTEMBER 2024
Scale:	NOT TO SCALE
Sheet No.:	BD-01
	1 OF 2



NOTE:

USE ON ALL CONNECTIONS OF HDPE TO PVC. ADAPTER SHALL MEET PRESSURE REQUIREMENTS OF THE PIPE AS INDICATED IN THE SPECIFICATION.

MANUFACTURED TO AWWA C906 REQUIREMENTS EFFECTIVE 1/1/98.

1 / BD-02 FLANGED ADAPTER

NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 022631 ENGINEER CHARLES W. DAVIS

Signed by: Charles W. Davis 943EA9DD156D4E5...

9/9/2024

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	2 OF 2