

BRUNSWICK COUNTY

INVITATION TO BID

Addendum No. 1 Southport Evaluation and Rehabilitation of Wastewater System - REBID

ISSUE DATE: **January 15, 2026**

DUE DATE: **February 4, 2026**



[BRUNSWICKCOUNTYNC.GOV/BID](https://www.brunswickcountync.gov/bid)

**ADDENDUM NO. 1
FOR BRUNSWICK COUNTY PUBLIC UTILITIES
Southport Evaluation and Rehabilitation of Wastewater System - REBID**

DATE: January 15, 2026

TO: Prospective Respondents and Others Concerned

This Addendum forms a part of the Contract Documents and modifies the Invitation to Bid Documents dated January 15, 2026, with amendments and additions noted herein below.

This Addendum consists of 59 pages.

CLARIFICATIONS

Item 1. A pre-bid meeting was held on Thursday, October 23, 2025. The meeting agenda, questions from the meeting, and a list of attendees are included with this Addendum.

SPECIFICATIONS

Item 2. Instructions to Bidders

- ADD the following immediately after paragraph 1.f. Form of Bid Bond or cash deposit:

“g. American Iron and Steel Certification”

Item 3. Form of Proposal – A revised bid form is attached for your use. No other bid form will be accepted.

- REMOVE Bid Items 27 and 28 and REPLACE with the following:

27	Manhole Coating, up to 4’ Diameter, 0 to 3 ft Depth	EA	9
28	Manhole Coating, up to 4’ Diameter, 3 to 6 ft Depth	EA	11

- INSERT the following after Item 28, renumbering the remaining items:

29	Manhole Coating, up to 4’ Diameter, 6 to 8 ft Depth	EA	6
30	Manhole Coating, up to 4’ Diameter, 8 to 10 ft Depth	EA	3
31	Remove Water Service from MH	EA	1

Item 4. Section 01 27 00 - Pay Item Descriptions

- Under Article 1.4 Pay Items, REPLACE Paragraph M.4. with the following:

“4. Payment will be made in accordance with the unit price bid.”

- Under Article 1.4 Pay Items, ADD Paragraph Q. Water Service Removal from Manhole as follows:

“Q. Water Service Removal from Manhole:

1. Item includes furnishing all materials, equipment, and labor required to remove water service from manhole. If it is a dead line, Contractor to cut and cap water service outside of manhole, patch manhole, and restore site to existing or better condition. If it is under pressure, Contractor shall cut the water service at main, and close corp stop at main, remove service from manhole, patch manhole, and restore site to existing or better.
2. Payment will be made in accordance with the unit price bid.”

Item 5. Section 33 01 37 - Manhole Rehabilitation and Repairs

- INSERT the following two paragraphs before Paragraph 2.1 Modified Polymer Based Three Layer Coating System Materials (For Use on Existing Manholes in Corrosive Manholes):

“2.1 CEMENTITIOUS COATING SYSTEM MATERIALS (100% Calcium Aluminate System):

- A. 100% calcium aluminate repair mortars shall be a prepackaged mortar mix, including all cement, aggregates, and any required additives with the proper amount of potable water so as to produce concrete suitable for spray application. 100% calcium aluminate cementitious structural rehabilitation systems shall be suitable for use on all brick manholes, vented or non-vented, and in moderate corrosive environments.
- B. The addition of Portland cement, other aggregates, or any admixtures whatsoever to lining material is prohibited.
- C. The chemical composition of the cement portion as well as the aggregates of the mortar mix shall be as follows:

Al ₂ O ₃	CaO	FeO + Fe ₂ O ₃	SiO ₂
39-44%	35-39%	9-14%	5-7%

- D. The design properties of the mortar mix shall be as follows:

Compressive Strength (ASTM C109)	> 5,500 psi	24 hours
Flexural Strength (ASTM C293)	> 1,200 psi	24 hours
Splitting Tensile Strength (ASTM C496)	> 800 psi	24 hours
Slant Shear test (ASTM C882)	> 1,200 psi	24 hours
Shrinkage at 28 days (ASTM C596)	< 0.08% cured @ 90% relative humidity	
Freeze/Thaw after 300 Cycles (ASTM C666)	No visible damage after 300 cycles	

- E. The mortar mix shall be designed to withstand long-term exposure to a bacterially corrosive hydrogen sulfide environment that may be expected to produce a pH of 1 on normal Portland cement based concrete or typical brick and mortar surfaces.

- F. Water used in mixing shall be fresh, clean, potable water, free from injurious amounts of oil, acid, alkali, vegetable, sewage and/or organic matter. Water shall be considered as weighing 8.32 pounds per gallon.
- G. Where inflow or infiltration is observed within the structure after surface preparation is complete, a rapid setting crystalline enhanced hydraulic cement product specifically formulated for infiltration control shall be used to stop minor infiltration flows in accordance with the manufacturer's recommendations. The material shall meet the following strength requirements:

Compressive Strength (ASTM C597B)	600 psi	(24 Hours)
	1,000 psi	(7 days)
Bond Strength (ASTM C321)	30 psi	(1 hour)
	80 psi	(1 day)

- H. Hydraulic cement shall be Preco Plug, Octocrete, Burke Plug, or Engineer approved equal.
- I. Where infiltration flows are more severe, pressure grouting may be required. The material for pressure grouting shall be Avanti A-220, DeNeef, Seal Guard II, or Engineer approved equal installed in accordance with the manufacturer's written instructions.

2.2 CEMENTITIOUS COATING SYSTEM MATERIALS (Blended Calcium Aluminate System):

- A. A blended calcium aluminate mortar (CAM) system shall be a blend of quartz silica, fibers, and calcium aluminate cement designed for areas of low to moderate hydrogen sulfide concentration.
- B. The addition of Portland cement, other aggregates, or any admixtures whatsoever to lining material is prohibited.
- C. The design properties of the blended calcium aluminate mortar mix shall be as follows:

Compressive Strength (ASTM C109)	> 6,730 psi	24 hours
Flexural Strength (ASTM C293)	> 655 psi	24 hours
Splitting Tensile Strength (ASTM C496)	> 650 psi	28 days
Slant Shear test (ASTM C882)	> 1,765 psi	28 days
Shrinkage at 28 days (ASTM C596)	< 0.0310%	
Freeze/Thaw after 300 Cycles (ASTM C666)	No visible damage after 300 cycles .”	

- Under Part 3 Execution, DELETE Paragraph 3.5.D.

DRAWINGS

Item 6. Sheet G-1: General Notes - ADD the following paragraph after paragraph 7:

“8. Any live oak trees required to be pruned for this project shall be pruned by a certified arborist.”

Item 7. Sheet D-7: Rehabilitation of Existing Manhole Detail - REMOVE paragraph 10 stating that all rehabilitated manholes shall be vacuum tested..... And renumber paragraphs 11 and 12 to 10 and 11 accordingly.

Item 8. Sheet D-7: Typical Point Repair - DELETE last sentence of Note 2 stating that all costs of special backfilling shall be made at the unit prices bid sheet for street/road repairs.

QUESTIONS

Item 9. How do the ARPA funds work? Does the project have to be totally complete by December 31, 2026?

Answer: No, the project does not have to be completed by December 31, 2026. US Treasury mandates that all ARPA funds must be fully expended by December 31, 2026. That includes receipt and payment of all invoices that will be covered by said ARPA funds. This project has two sources of funding, and the County expects that all ARPA funds will be fully expended first, by said date. The project duration will be as set forth in the Bid Documents. Contractors should be aware that their obligation to comply with the Regulatory Requirements, including those related to the SRP-ARPA Funds, as defined in the Bid Documents, will extend through project completion and any required reporting thereafter.

Item 10. Can you clarify if this is a lump sum or unit price project?

Answer: The project has both lump sum and unit price items. Please refer to Article 39 of the General Conditions for clarification.

Item 11. Do manholes need to be bypassed?

Answer: Yes, if the manhole rehabilitation needed requires bypass pumping.

Item 12. Are you keeping the manhole ladders?

Answer: Refer to the manhole rehabilitation detail on Sheet D-7.

Item 13. Would the City [sic] consider changing the “Cured-In-Place Pipe (CIPP) Lining” bid items from Lump Sum (LS) to Linear Foot (LF)? This change would help ensure the City [sic] receives a more complete and comparable bid, and would also provide an established unit price should any additional CIPP work be added to the contract through change orders or unforeseen conditions.

Answer: The Cured-in-Place Pipe (CIPP) bid item will stay as Lump Sum.

Item 14. The Plans and Specs for this project include reference to Manholes and possibly a Valve Vault or 2. I have not been able to locate the details for these structures in the plans so far. Could

you please point me to these Details so I can pass it along to one of my Vendors who also has been unable to locate these details?

Answer: Details for the manhole rehabilitation are shown on D-7.

Item 15. The legend shows MHs to be rehabbed are highlighted in green (28 total), while purple MHs are polymers and pink MHs are ring and cover change-outs.

Answer: Confirmed.

Item 16. Section 33 01 37 pages 1, 2, and 3 "manhole rehab and repairs" specification "part 1 scope 1.1 item A-3" calls for "calcium aluminate cementitious rehabilitation system"; this mortar system is referenced throughout page 2 and 3 as well. However, on page 3 the specification (under "part 2 products 2.1") starts referencing "modified polymer 3-layer coating system" on page 4, while still under "part 2", "products 2.2" references "polymorphic resin liner system" which is duramer [sic] 1030 or duraplate [sic] 6100.

Answer: Calcium aluminate cementitious rehabilitation system specification added per this Addendum.

Item 17. In the pre-bid meeting, I asked if Sherwin Williams Duraplate [sic] 6000 could be submitted for approval for the ARVMHs (forcemain manholes) since it is currently being used on other projects in Brunswick County and it was stated that it could be submitted.

Answer: Contractors are permitted to submit "or equal" products in accordance with the Contract documents.

Item 18. It was stated in the pre-bid meeting that the "green" rehab MHs get only cementitious liner while the ARV manholes will get coated with duraplate [sic] 6000. Will this be confirmed in an addendum?

Answer: Refer to Specification 33 01 37 - Manhole Rehabilitation and Repairs.

Item 19. Page 33-01-37-8 item "D" states that we are to "remove all ladder rungs and manhole steps and fill holes and pits"; this is a very dangerous practice as it requires either the use of grinders / electric saws or hydraulic jacks to pull out old steps. It is difficult to operate a large cutting tool within a confined space, let alone one that is only 4 or 5 foot diameter like the MHs on these plans. If the steps are still properly embedded in the concrete, may we leave them in place?

Answer: See the revised Specification 33 01 37 in this Addendum.

Item 20. Can you confirm that they want sewer bypassing on each and every manhole so we can coat the actual invert channel as per detail on bottom left hand corner of page D-7?

Answer: Manholes will need to be bypassed as necessary to complete the required repairs.

Item 21. Note 10 on manhole detail on page D7 indicates all manholes are to be vacuum tested after all rehab work is complete; vacuum testing can only be done during the bypass process – see prior comment.

Answer: See this Addendum.

Item 22. Note 11 on manhole detail page D7 indicates the engineer is going to specify which manholes are to receive an exterior coating, I don't see any manholes specified for an exterior coating on the plan pages. Can you please confirm?

Answer: This repair work is incidental to manhole coating.

Item 23. When do you expect to issue the notice to proceed?

Answer: January 2026.

Item 24. Will the Contractor have to pay for water used for testing the new main? If so, could you provide the rate that will be charged?

Answer: The Contractor is responsible for water.

Item 25. How will it be handled if rock is encountered in the directional drill?

Answer: Rock is not anticipated.

Item 26. Would you consider changing bid items 4 & 5 to LF instead of a lump sum, based on what we have seen out there? If you have a call out for one size and it is the other, then this will make changing it simpler.

Answer: No.

Item 27. Please provide the flow direction for gravity & forcemain on the rehabilitation areas shown on A, B, C, D, and E

Answer: Flow direction as needed can be ascertained after award of contract and will not be provided in the bid documents.

Item 28. Could you please provide flow rates of the pump stations and associated Force mains that relate to the Manhole Replacements?

Answer: The flow rate for bypass pumping during manhole replacement shall be based on the gravity sewer outlet pipe size.

Item 29. How long can the existing pump stations be shut down so that we can replace the manholes?

Answer: No shutdowns will be permitted.

Item 30. Please provide a detail for Manhole Replacement with Polymer Concrete Manhole.

Answer: Details for polymer concrete manholes will not be provided as part of the bid documents. Site inspection prior to bidding is permitted.

Item 31. Please clarify the existing pipe sizes and materials for all pipes connected to the existing manholes that will be replaced with Polymer Concrete Manholes.

Answer: Details of piping at manholes will not be provided as part of the bid documents. Site inspection prior to bidding is permitted.

Item 32. Bid item 20 will the sewer service replacement cross the roads? If so, please consider making a long side and a short side service replacement.

Answer: This will not be considered due to the unknown of which services will need to be replaced.

Item 33. Bid items 27 and 28, please make these by the each 0'-6', 6'-8', 8'-10', and 10'-12'.

Answer: See the revised bid form included in this Addendum.

Item 34. In section 33 01 30.72, it says that we must vacuum test the rehabbed manholes, and also spelled out on plans in detail for Rehab. Manholes. If you vacuum test these manholes, it could disturb the lining that was installed, and they typically will not hold a vacuum since the existing manholes are not concrete or able to be vacuum tested before the lining.

Answer: See related items in this Addendum.

Item 35. On the forcemain, will the contractor be able to shift the alignment to avoid existing utilities and live oaks?

Answer: Only with Engineer approval.

Item 36. What is to be used for the force main backfill when it is installed under the pavement? If something other than excavated material is used, will it be paid for at unit prices as stated in note 2 under Point Repair Detail?

Answer: Excavated material is planned to be used for force main backfill. With approval from the Engineer, there is a pay item for unsuitable soil removal and replacement.

Item 37. For bid items 8 - 17, the point repairs and cut-in wye point repairs, and then bid items 30 - 31 MH replacement, are all of these in the grass? It appeared when we did our site visit that some were in the pavement. Can you separate them out so that there are bid items for in soil, in asphalt, and in concrete? That way, we do not have to cover the worst case with all repairs? Or you can make an Asphalt Road, Mill and Overlay, and Concrete pay item that would cover these.

Answer: These items are incidental to the work and included in the unit price.

Item 38. For 16-17, Cut In Wye by Point Repair, do we just reconnect the service right after the new wye, or do we need to install the service up to a certain point?

Answer: It is anticipated that you would be connecting the service to the new wye.

Item 39. Bid items 16 and 17, could you break these into 0'-8' depth & 8'-12' depth?

Answer: No.

Item 40. Note 2 on the detail of Point Repair says to replace excavated soil with select backfill, pit gravel, or flowable fill. Then it goes on to say that this backfill will be paid at the unit prices. There is only a unit price for select backfill, so is that what we are suppose to assume will be used to replace the unsuitable soil? Do we need the other items?

Answer: See this Addendum.

Item 41. Are all of the point repairs and manhole replacements shown on sheet figure 8 the only ones in NCDOT ROW?

Answer: Yes.

Item 42. For the point repairs and manhole replacements in NCDOT ROW, if we are replacing the pavement and doing the milling and overlay, do we need to use active shoring as well? The one said either or, but the others that show mill and overlay does not call for any active shoring?

Answer: No. See Figure 08.

Item 43. On the FM alignment, where we are 25' off the road, there are some live oaks that we will be digging in the root systems of. Are we allowed to clear these trees? If not, what happens if the tree dies after we have installed our pipe? Who will be responsible for removing it later?

Answer: You are not allowed to clear the tree without prior approval from Brunswick County Public Utilities.

Item 44. We need a location where the pump and haul trucks can dump. If it is all the way to grey water dr the cost will be much greater.

Answer: Pump and haul may be discharged downstream.

Receipt of this Addendum must be acknowledged on Page F - 7 of your Bid Form.

Sincerely,

W. K. Dickson & Co., LLC
NC Firm License No. F-0374

Monroe Huckaby, PE
Project Manager

Attachments:

1. Instructions to Bidders
2. Form of Proposal
3. Section 01 27 00 - Pay Item Descriptions
4. Section 33 01 37 - Manhole Rehabilitation and Repairs
5. Sheet G-1
6. Sheet D-7
7. Pre-Bid Meeting Sign-In Sheet and Agenda

SEAL serves as signature



--END OF ADDENDUM--

INSTRUCTIONS TO BIDDERS

For a proposal to be considered it must be in accordance with the following instructions. Capitalized terms used but not defined herein shall have the meaning(s) ascribed to them in the General Conditions of the Contract.

1. Bids: Bids must be made in accordance with the Form of Proposal provided, and all blank spaces for bids, alternates, and unit prices applicable to Bidder's Work shall be properly filled in. When requested alternates are not bid, the proposal may be considered non-responsive. The Bidder agrees that a bid on the Form of Proposal detached from specifications will be considered and will have the same force and effect as if attached thereto. Faxed bids will not be considered. Numbers shall be stated both in writing and in figures for the base bids and alternates. Words shall take precedence over numerical symbols.

The proposal shall include the following:

- a. Form of Proposal
- b. Socioeconomic Contracting Affidavit
For items c. through e., see the enclosed "NC Division of Water Infrastructure MBE/WBE (DBE) Compliance Supplement – Instructions" (Instructions Pages 1 and 2)
- c. Good Faith Efforts Form (Good Faith Efforts Form, Pages 1 and 2)
- d. Table A: Prime Contractor and List of Selected Subcontractors
- e. Table B: Subcontract Solicitation List (if applicable/required).
If Table B is applicable/required, the Contractor shall submit documentation of efforts to solicit proposals from DBEs.
- f. Form of Bid Bond or cash deposit.
- g. American Iron and Steel Certification.

Any modifications to the Form of Proposal (including alternates and/or unit prices) will disqualify the bid and may cause the bid to be rejected.

The Bidder shall fill in the Form of Proposal as follows:

- a. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
- b. If the documents are executed by a partnership, that fact shall be evidenced by the word "CoPartner" appearing after the name of the partner executing them.
- c. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall

appear after their signatures. The seal of the corporation shall be placed on each signature page of the documents.

- d. If the proposal is made by a joint venture, it shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable.
- e. All signatures shall be properly witnessed.
- f. If the Contractor's license of a Bidder is held by a person other than an owner, partner, or officer of a firm, then the licensee shall also sign and be a party to the proposal. The title "Licensee" shall appear under his/her signature.

Unless otherwise noted, bids shall be addressed as indicated in the Notice to Bidders and shall be delivered, enclosed in an opaque sealed envelope, marked "SEALED BID, DO NOT OPEN" and bearing the project name, name of the Bidder, address of the Bidder, and the Contractor's license number. Bidders shall clearly mark on the outside of the bid envelope which Contract(s) they are bidding.

Bidder shall identify on the bid the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts or an affidavit indicating Work under Contract will be self-performed, as required by NCGS 143-128.2(c) and NCGS 143-128.2(f). Failure to comply with these requirements is grounds for rejection of the bid. Upon notification of being the apparent low Bidder, the apparent low Bidder and any other Bidder so requested, will within seventy-two (72) hours of the notification submit an affidavit that includes a description of the portion of Work to be executed by minority businesses, which is equal to or more than the applicable goal (Affidavit C), or submit an affidavit documenting the Contractor's good faith efforts to meet the goal (Affidavit D).

For projects bid in the single-prime alternative, the names and license numbers of major Subcontractors shall be listed on the proposal form. **Brunswick County reserves the right to accept or reject any proposed Subcontractor in its sole and absolute discretion. All decisions of Brunswick County shall be final and binding.**

It shall be the specific responsibility of the Bidder to deliver the bid to the proper official at the designated place and prior to the announced time for the opening of bids. Brunswick County will not be responsible for the failure of any mail or delivery service to deliver a bid prior to the stated date and time. Regardless of the manner of submission, any bid received after the stated date and time will not be considered. Incomplete bids or bids inconsistent with the required format may be disqualified from consideration.

Modifications of previously deposited bids will be acceptable only if delivered in writing prior to the bid opening.

Unit prices quoted in the proposal shall include overhead and profit and shall be the full compensation for the Contractor's cost involved in the Work. See General Conditions, Article 38 - "Changes in the Work" Paragraph (C 1).

2. Examination and Conditions of Contract Documents: It is understood and mutually agreed that by submitting a bid the Bidder acknowledges that it has carefully examined all documents pertaining to the Work; the location, accessibility, and general character of the site of the Work and all existing buildings, structures, and utility facilities within and adjacent to the site; and has satisfied itself as to the nature of the Work; sequences or procedures of construction (if any); the condition of existing buildings and structures; the conformation of the ground; the character, quality, and quantity of the material to be encountered; the subsurface conditions (including type and depth of rock and soil layers); the character of the equipment, machinery, plant and any other facilities needed preliminary to and during prosecution of the Work; the general and local conditions; federal, state, and local laws and regulations; the construction hazards; and all other matters, including, but not limited to, the labor situation which can in any way affect the Work under the Contract; and including all safety measures required by the Occupational Safety and Health Act of 1970 and all rules and regulations issued pursuant thereto. It is further mutually agreed that by submitting a proposal the Bidder acknowledges that it has satisfied itself as to the feasibility and meaning of the plans, drawings, specifications, and other Contract Documents for the construction of the Work and that it accepts all the terms, conditions, and stipulations contained therein; and that it is prepared to Work in cooperation with other Contractors performing Work on the site. Neither the Owner nor Designer, as applicable, assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.

Reference is made to Contract Documents for the identification of any surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the Work which may have been relied upon by the Designer or Owner in preparing the documents. In no event shall these surveys and investigation reports be considered part of the Contract Documents. The Owner will make copies of all such surveys and reports available to the Bidder upon request. Neither the Owner nor the Designer assumes any responsibility for the accuracy or completeness of the information provided.

Each Bidder may, at their own expense, make such additional surveys and investigations as it may deem necessary to determine the bid price for the performance of the Work. Any onsite investigation shall be done at the convenience of the Owner. Reasonable requests for access to the site will be honored by the Owner. It is the responsibility of the Bidder to clean up and restore the site to its former condition upon completion of such explorations, investigations, tests, and studies. Such Work shall be done in a manner that in no way hinders or complicates normal operation and maintenance of existing facilities.

The Contractor performing excavation Work shall be responsible for locating underground utilities prior to excavation. The utility locations shown in the plans are approximate and for information only. The Contractor shall obtain the services of a commercial utilities locator and/or call the various utility companies who may have lines in the area.

3. Availability of Lands for Work: The lands upon which the Work is to be performed, rights-of-way, and easements for access thereto and other lands designated for use by the Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage for materials and equipment to be incorporated into the Work are to be obtained and paid for by the Contractor. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by the Owner unless otherwise provided in the Contract Documents.

4. Pre-Bid Conference: Prior to the date set for receiving bids, the Designer or Owner may arrange and conduct a pre-bid conference for all prospective Bidders. The purpose of this conference is to review project requirements and to respond to questions from prospective Bidders and their Subcontractors or material suppliers related to the intent of Bidding Documents. Attendance by prospective Bidders shall be as required by the "Notice to Bidders." Brunswick County strongly encourages attendance at the pre-bid meeting. It should be noted that attendance may help to fulfill necessary MBE requirements.

5. Substitutions: In accordance with the provisions of NCGS 133-3, material, product, or equipment substitutions proposed by the Bidders to those specified herein can only be considered during the bidding phase until ten (10) days prior to the receipt of bids when submitted to the Designer or Owner with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change orders.

Submittals for proposed substitutions shall include the following information:

- a. Name, address, and telephone number of manufacturer and supplier as appropriate.
- b. Trade name, model, or catalog designation.
- c. Product data including performance and test data, drawings with dimensions, specifications, catalog cut-sheets, electrical requirements and schematic diagrams, materials of construction of all components, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.
- d. Detailed comparison with specified products including performance capabilities, warranties, maintenance schedule, and test results. Any deviations to the specified product requirements shall be noted.

- g. Other pertinent data including data requested by the Designer or Owner to confirm product equality. This may include examples of the substitutes in use on other projects along with performance records. The Contractor shall demonstrate that the Substitution will function equally or better than the specified product, taking into account the Owner's need of standardization and compatibility with other infrastructure components.
- h. Listing of spare parts to be included with Substitution.
- i. A comparison of the impact on the Contractor's schedule between using the proposed Substitution item and the specified product.

If a proposed material, product, or equipment substitution is deemed adequate by the Designer or Owner, all Bidders of record will be notified by Addendum.

6. Bulletins and Addenda: Any addenda to specifications issued prior to the bid opening shall be considered covered in the Proposal and in closing a Contract they will become a part thereof. Addenda may include, but are not limited to, answers to questions, clarifications, and amendments of the Contract Documents. It shall be the Bidder's responsibility to ascertain prior to bid time the addenda issued and to see that the bid includes any changes thereby required.

Should the Bidder find discrepancies, errors, conflicts, ambiguities, or omissions from the drawings or documents, conflicts between Bidder's observations and the Contract Documents; or should it be in doubt as to the meaning of the Contract Documents, it shall at once notify the Designer or Owner who will provide written instructions in the form of addenda. The Bidder shall submit all questions or requests for clarifications in writing as set forth in the Notice to Bidders no later than the date established in the Invitation to Bid and Notice to Bidders. **Bidders are expressly prohibited from contacting any Brunswick County official or employee except in the manner noted in the Notice to Bidders. A violation of this provision is grounds for the immediate disqualification of the bidder.** A copy of all questions, further clarifications and answers will be made in the form of an addendum. Such addendum will be provided to all known bidders and posted on the County's website. Notwithstanding the foregoing, bidders will be responsible for ensuring that they have all addenda. All addenda shall be acknowledged by the Bidder(s) on the Form of Proposal. The Owner shall endeavor to issue addenda approximately three (3) days prior to the date set for receipt of bids. Neither the Owner nor the Designer will be responsible for any oral instructions.

In the event that discrepancies, errors, conflicts, ambiguities, or omissions are discovered by the Bidder that have not been resolved by the Designer or Owner prior to submitting the bid, the Bidder shall include in the bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in greater cost. Such greater cost shall be included in the bid.

7. Bid Security: If applicable, each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company insured by the Federal Deposit Insurance Corporation, or a bid bond in an amount equal to not less than five percent (5%) of the Bidder's maximum bid price, said deposit to be retained by the Owner as liquidated damages in event of failure of the successful Bidder to execute the Contract within ten (10) days after the award or to give satisfactory surety as required by law (NCGS 143129).

The bid bond shall be conditioned that the surety will, upon demand, immediately make payment to the obligee upon said bond if the Bidder fails to execute the Contract. The Owner may retain bid securities of any Bidder(s) who may have a reasonable chance of award of Contract until the 101st day after the bid opening. Other bid securities may be released sooner, at the discretion of the Owner. All bid securities (cash or certified checks) shall be returned to the Bidders within ten (10) days after award of Contract. Standard Form of Bid Bond is included in the Bidding Documents.

8. Receipt of Bids: Bids shall be received in accordance with requirements of the General Statutes of North Carolina and Brunswick County policy. Bid security shall be required as prescribed by statute. Prior to the deadline for receipt of bids, the Bidder will be permitted to change or withdraw his or her bid.

9. Opening of Bids: Upon opening, all bids shall be opened publicly and read aloud. Once any bid is opened, no bids may be returned by the Designer or Owner to any Bidder. After the bid opening, a Bidder may request that its bid be withdrawn from consideration without forfeiture of the bid security only in accordance with the provisions of the NCGS 143129.1. In accordance with NCGS 143-129.1, a request for withdrawal of a bid must be made in writing to the Owner within seventy-two (72) hours after the bid opening (excluding Saturdays, Sundays, Brunswick County holidays, and other days in which the Brunswick County government offices are closed). Except under the provisions of NCGS 143129.1, all bids shall remain valid a minimum of ninety (90) days from the opening of bids. Award shall be made to the lowest responsive, responsible bidder unless otherwise specified. Approval of the proposal by the Brunswick County Board of Commissioners at a public meeting or a signed "Notice of Award" shall constitute acceptance of the bidder's proposal. Notwithstanding the foregoing, Brunswick County shall not be deemed to have finally selected a bidder, and no bidder may begin performing any Work until a Contract has been successfully negotiated and signed by both parties. Should the successful Bidder default and fail to execute a Contract, the Contract may be awarded to the next lowest responsive, responsible Bidder.

The Owner reserves the unqualified right to reject, without prejudice or explanation, any and all bids. Reasons for rejection may include, but shall not be limited to, the following:

- a. If the Form of Proposal furnished to the Bidder is not used or is altered.
- b. If the Bidder fails to insert a price for all bid items, alternate and unit prices requested.
- c. If the Bidder adds any provisions reserving the right to accept or reject any award.
- d. If there are unauthorized additions or conditional bids, or irregularities of any kind which tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
- e. If the Bidder fails to complete the proposal form where information is requested so the bid may be properly evaluated by the Owner.
- f. If the unit prices contained in the bid schedule do not appear to fall within a competitive range, in Owner's sole judgment.
- g. If the Bidder fails to comply with other instructions stated herein.
- h. If the Owner suspects the Bidder of collusion or fraud.
- i. If the Bidder does not submit all the required proposal forms.
- j. If the Bidder does not execute the complete Contract (with performance and payment bonds) within ten (10) days of receipt of the Notice of Award or by such other time as the Owner may designate.

10. Bid Evaluation and Bidder Qualifications: The award of the Contract will be made to the lowest responsive, responsible Bidder as soon as practical. The Owner may award on the basis of the base bid, unit prices, any alternates the Owner chooses, as well as meeting the requirements for consideration as a responsible Bidder. Discrepancies on the Bidder's proposal shall be resolved based on the Owner's inspection and interpretation of the proposal as a whole. In cases where it is not evident what portion of a proposal is errant, discrepancies shall be resolved as follows:

- Words shall take precedence over numerical symbols.
- Unit prices shall take precedence over the associated extended price (quantity multiplied by the unit price).
- The correct sum of any column of figures shall take precedence over the indicated sum.

Before awarding a Contract, the Owner may require the apparent low Bidder to qualify himself or herself to be a responsible Bidder by furnishing any or all of the following data:

- a. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the Owner.
- b. A listing of completed projects of similar size and type.
- c. Project references.
- d. Permanent name and address of place of business.

- e. The number of regular employees of the organization and length of time the organization has been in business under its present name.
- f. The name and home office address of the surety proposed and the name and address of the responsible local claim agent.
- g. The names of members of the firms who hold appropriate trade licenses, together with license numbers and the corporate officer who will give his or her personal attention to the Work.
- h. Qualifications and references of the resident project superintendent.
- i. Other commitments scheduled within the project's projected timeframe.
- j. The Contractor shall perform Work amounting to at least fifty percent (50%) of the Contract using their own personnel and equipment (owned). No portion of the Contract shall be sublet, assigned, or otherwise disposed of without the express written consent of the Owner. If the Contractor fails to demonstrate to the Owner that they have the ability to perform the specified percentage of the Work with their own personnel and equipment, the bid may be considered nonresponsive.
- k. An experience statement with pertinent information as to similar projects and other evidence of the qualifications for each subcontractor, person, equipment manufacturer, or organization that will furnish labor or materials. If the Owner or Designer, after investigation, has reasonable objection to any such entity, it may request an acceptable substitute without any increase in the bid price. This does not remove any responsibilities for the substitute to comply with the Contract specifications.

Requested information shall be furnished to the Owner within five (5) days after bid opening. Failure or refusal to furnish any of the above information, if requested, shall constitute a basis for disqualification of any Bidder.

In determining the lowest responsive, responsible Bidder, the Owner shall take into consideration the quality, performance, and time specified in the proposal for the performance of the Contract.

11. Contract, Performance Bond, Payment Bond, Insurance, E-Verify: The successful Bidder, within twelve (12) days of receipt of the "Notice of Award," shall sign and deliver the required number of Contract counterparts, a performance bond in an amount equal to one hundred percent (100%) of the Contract Price, a payment bond in an amount equal to one hundred percent (100%) of the Contract Price, all necessary certificates of insurance, and any other conditions precedent set forth in the Notice of Award. Contractor shall comply with the requirements of Article 2 of Chapter 64 of the General Statutes. Further, if Contractor utilizes a subcontractor, Contractor shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the General Statutes. An additional performance guarantee with the North Carolina Department of Transportation may be required for work performed in the right-

of-way. In this event, the successful Bidder, within twelve (12) days of receipt of the “Notice of Award,” shall supply the Owner with a copy of the executed performance guarantee and evidence of acceptance by the NCDOT. See the General Conditions sections “Terminology and Intent of Documents,” “Execution of Documents,” “Performance Bond and Payment Bond,” “Minimum Insurance Requirements,” and any applicable Supplementary General Conditions.

12. Payments: Unless otherwise specified, payments to the successful Bidders (Contractors) will be made on the basis of monthly estimates. See Article 52 - “Requests for Payment,” General Conditions.

13. Minority Business Participation: Bidders are notified that NCGS 143-128.2 and the “Brunswick County Minority Enterprise Policy” shall be observed in receiving and awarding Contracts. As noted in Section 1, appropriate forms and affidavits must be submitted with the bids. Please refer to Section 14 for additional requirements that apply to federal or grant funded projects. The state document entitled “Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts” may be used for reference. It may be obtained from the State Construction Office website (<http://www.nc-sco.com>). A listing of Historically Underutilized Businesses may be obtained through the North Carolina Department of Administration Office for Historically Underutilized Businesses at <http://www.doa.state.nc.us/HUB/>. Brunswick County promotes the notification and use of Brunswick County based businesses.

14. Federal or Grant Funded Projects: If **any** portion of a project is funded with federal and/or grant funding, whether in whole or in part, the requirements of this Section 14 also apply. In the event the requirements between or among state and federal statutes differ, the most restrictive requirements will govern. Bidders interested in being considered for federal or grant funded Work must agree to strictly adhere to all federal requirements as well as any applicable grant award terms and conditions, as more particularly set forth in the Invitation to Bid and/or Notice to Bidders. These requirements shall also apply to Contractors and Subcontractors, as applicable, under an awarded Contract.

- a. **Compliance.** In performing Work under any Contract funded with federal and/or grant funds, whether in whole or in part, the Bidder must comply with applicable grant award terms and conditions, applicable federal laws, regulations, executive orders, federal government policies, procedures, directives, or guidance that the federal government and/or the grantor agency has issued or may issue governing the expenditure of such funds. The Bidder must also comply with the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 C.F.R. Part 200, which include, without limitation, applicable provisions described in Appendix II to 2 C.F.R. Part 200. Further, pursuant to 2 C.F.R. § 200.327, applicable provisions described in Appendix II to 2 C.F.R. Part 200, shall be included in the Contract Documents, with the Bidder’s express agreement to

adhere to same. The County's payment of funds to the Bidder under any such Contract shall be contingent upon Bidder's compliance.

- b. Minority Business Participation. In addition to the requirements of Section 13, pursuant to 2 C.F.R. § 200.321, Bidders shall ensure that small businesses, minority businesses, women's business enterprises, veteran-owned businesses, and labor surplus area firms are considered. Such consideration includes: (1) these business types are included on solicitation lists; (2) these business types are solicited whenever they are deemed eligible as potential sources; (3) dividing procurement transactions into separate procurements to permit maximum participation by these business types; (4) establishing delivery schedules (for example, the percentage of an order to be delivered by a given date of each month) that encourage participation by these business types; (5) utilizing organizations such as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and (6) requiring a contractor under a Federal award to apply this section to subcontracts. For the purposes of this section, an entity shall qualify (1) as a "minority business" or "women's business enterprise" if it is currently certified as a North Carolina "historically underutilized business" under Chapter 143, Section 128.4(a) of the North Carolina General Statutes, and (2) as a "small business" if it is independently owned and operated and is qualified under the Small Business Administration criteria and size standards at 13 C.F.R. Part 21.

In addition to the Proposal submittal requirements set forth in Section 1, the Bidder must also include the Socioeconomic Contracting Affidavit with its submission.

- c. Utilization of Small Business Concerns. The Bidder must agree to adhere to the requirements of 48 C.F.R. § 52.219-8, as applicable.
- d. Disclaimer of Federal Government Obligations or Liability. If applicable, the Bidder and any Subcontractors, acknowledge and agree that, notwithstanding any concurrence by the federal government in or approval of the solicitation or award of a contract in connection with this Invitation to Bid, absent the express written consent by the federal government, the federal government is not a party to this solicitation or any subsequent agreement and shall not be subject to any obligations or liabilities to the Bidder, or any other party (whether or not a party to this solicitation or an awarded Contract) pertaining to any matter resulting from the solicitation or an awarded Contract. It is further agreed that this clause shall be included in each subcontract, if applicable, and shall not be modified, except to identify the Subcontractor who will be subject to its provision.

- e. SAM.gov Registration. Interested Bidders must have an active registration in the federal System for Award Management (SAM.gov). In addition to the Proposal submittal requirements set forth in Section 1, the Bidder must also provide proof of such registration with its submission.
- f. Energy Conservation Requirements. Pursuant to 42 U.S.C. 6321 et seq., the Bidder agrees to comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.
- g. Americans With Disabilities Act (ADA). The Bidder agrees to comply with all applicable requirements of the Americans with Disabilities Act of 1990 (ADA), as amended, 42 USC § 12101 et seq.; Section 504 of the Rehabilitation Act of 1973, as amended, 29 USC § 794; 49 USC § 5301(d); and any implementing requirements of the federal government. These regulations provide that no handicapped individual, solely by reason of his or her handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity included in or resulting from this bid.
- h. Privacy Act. The Bidder agrees to comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. § 552a. The Bidder agrees to obtain the express consent of the federal government before the Bidder or its employees operate a system of records on behalf of the federal government. The Bidder understands that the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying contract. The Bidder also agrees to include these requirements in each subcontract, if applicable, to administer any system of records on behalf of the federal government financed, in whole or in part, with federal assistance.
- i. Drug-Free Workplace. The Bidder shall adhere to the federal Drug Free Workplace requirements as outlined in 2 C.F.R. § 182. The Bidder shall make good faith efforts to maintain a drug-free workplace, publish a workplace statement, and establish drug-free awareness programs for employees. The Bidder should take action concerning employees who are convicted of violating drug statutes in the workplace. The Bidder shall contact Brunswick County if the Bidder cannot adhere to the requirements of the federal regulations noted above. Failure to comply with said provisions shall be considered a breach of Contract.

j. Additional Federal Provisions. The Bidder shall agree to comply with the following additional provisions and regulations, which are incorporated by reference to the extent permitted by applicable statute:

- Equal Employment Opportunity (41 C.F.R. Part 60)
- Davis-Bacon Act (40 U.S.C. 3141-3148; 29 C.F.R. Part 5)
- Copeland “Anti-Kickback” Act (40 U.S.C. 3145; 29 C.F.R. Part 3)
- Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708; 29 C.F.R. Part 5)
- Clean Air Act (42 U.S.C. 7401 et seq.)
- Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.)
- Debarment and Suspension (2 C.F.R. § 200.214; 2 C.F.R. Part 3000; Executive Orders 12549 and 12689)
- Byrd Anti-Lobbying Amendment (31 U.S.C. 1352 et seq.)
- Domestic Preference for Procurements (2 C.F.R. § 200.322)
- Build America, Buy America Act (2 C.F.R. Part 184; Pub. L. 117-58 §§ 70901-52)
- Procurement of Recovered Materials (2 C.F.R. § 200.323)
- Record Retention Requirements (2 C.F.R. § 200.334; 2 C.F.R. § 200.337)
- Prohibition on Contracting for Covered Telecommunications Equipment or Services (2 C.F.R. § 200.216)
- No Obligation by Federal Government (2 C.F.R. § 200.318(k))
- Program Fraud and False or Fraudulent Statements or Related Acts (31 U.S.C. §§ 3729-3733)
- Socioeconomic Contracting (2 C.F.R. § 200.321)
- Providing Good, Safe Jobs to Workers (FEMA Information Bulletin No. 520)
- Buy Clean (Inflation Reduction Act)
- Copyrights (2 C.F.R. § 200.315)
- Title VI of the Civil Rights Act of 1964
- Section 504 of the Rehabilitation Act of 1973
- The Age Discrimination Act of 1975

FORM OF PROPOSAL

To: **BRUNSWICK COUNTY**

From: *Bidder* _____

Address _____

Tele./Fax _____

Date of Bid _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the Contract to be entered into; that this proposal is made without connection with any other person, company, or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. By signing this proposal, the bidder affirms they are not listed and will not utilize a subcontractor or vendor listed on the Final Divestment List created by the State Treasurer pursuant to NCGS 143-6A-4, Iran Divestment Act Certification. The Bidder further declares that he has examined the site of the work and the Contract Documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees if this proposal is accepted to Contract with **Brunswick County** in the form of Contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, supplies, labor, etc. necessary to complete the construction of:

Southport Evaluation and Rehabilitation of Wastewater System
DWI Project Nos. CS370714-04 & SRP-W-ARP-0299

in full in complete accordance with the plans, specifications, and Contract Documents, to the full and entire satisfaction of **Brunswick County** and their representatives with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the Contract Documents, for the **firm fixed price** sum of:

SINGLE PRIME CONTRACT:

Base Bid:

Rehabilitation of existing sewer infrastructure within the City of Southport and new construction of approximately 9,000 linear feet of 8-inch sanitary sewer force main connecting Park Avenue pump station to the manifold force main connection on NC 211 in the City of Southport to include the following:

- Installation of new PVC C900 force main by open cut, installation of fusible PVC C900 force main by horizontal directional drill (HDD), installation of new PVC C900 force main by bore and jack, connection to existing and/or proposed force mains, installation of air release valves, and site restoration.
- Cut-in 6-inch force main connection between the existing 6-inch Ninth Street PS force main and existing 8-inch Central PS force main including fittings, restrained PVC C900, and valves, near the intersection of Ninth Street and Clarendon Avenue.
- Rehabilitation of gravity sewer piping by cured-in place lining (CIPP) and point repairs; rehabilitation and replacement of sewer services and cleanouts; rehabilitation of manholes, including manhole lining, installation of inside service drop connections, realignment and replacement of manhole ring and covers, manhole infiltration dish installation, and manhole bench/invert repair; and replacement of select manholes with polymer concrete manholes.

Dollars(\$)

(alpha) *(numeric)*

General Subcontractor:
 _____ Lic _____

Plumbing Subcontractor:
 _____ Lic _____

Mechanical Subcontractor:
 _____ Lic _____

Electrical Subcontractor:
 _____ Lic _____

When the project is a Building, NCGS 143-128(d) requires all Single Prime Bidders to identify their Subcontractors for the above subdivisions of work. A Contractor whose bid is accepted shall not substitute any person as Subcontractor in the place of the Subcontractor listed in the original bid, except in accordance with NCGS 143-128(d).

Under separate Prime Contracts, the Contractor shall act as Project Expediter for all Prime Contracts. See Supplementary General Conditions.

TRENCHLESS PIPE INSTALLATION SUBCONTRACTORS:

Horizontal Directional Drill Subcontractor:

See the General Conditions Article 20 D 3 and Article 35 D.

ATTACHED DOCUMENTS:

The following documents are attached to and made a condition of this Bid:

- Form of Bid Bond or Bid Security
- Socioeconomic Contracting Affidavit
- NC Division of Water Infrastructure MBE/WBE (DBE) Compliance Supplement
- Good Faith Efforts Form
- Table A – Prime Contractor and List of Selected Subcontractors
- Table B – Subcontractor Solicitation List (if required)

UNIT PRICES

Unit prices quoted and accepted shall apply throughout the life of the Contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the scope of the work all in accordance with the Contract Documents. Bidder acknowledges that quantities are approximate only and are given as the basis for comparison of Bids. The Owner may increase or decrease the quantity of any item or portion of the work as may be deemed necessary or expedient. An increase or decrease in the quantity of any item will not be regarded as sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided for in the General Conditions. The quantities shown on the proposal form are for the base bid only unless the contract documents specifically indicate that the item(s), or any portion thereof, are part of an alternate bid element. It is the responsibility of the Contractor to apportion the cost of unit price items to the base bid and any alternates listed in the Proposal using information in the Contract Documents. In the event that the Owner selects an alternate that clearly increases or decreases the estimated quantity of a unit price item shown on the proposal form, after selection of the Contractor, the Contractor shall be provided an updated list of estimated unit price quantities reflective of the alternates chosen. This updated list shall be used in determining any variation between the actual quantities and the estimated quantities of the unit price work. An estimated unit price quantity shall be updated only in the event that the Contract Documents clearly indicate that the unit price item was indeed part of the Owner-selected alternate. The cost for all unit price items shall be included within either the base bid or an alternate, as applicable.

The bidder further proposes and agrees hereby to commence work under this Contract on a date to be specified in a written order of the Designer and shall fully complete all work thereunder within the time specified in the Notice to Bidders. Applicable liquidated damages amount is also stated in the Notice to Bidders (see General Conditions “Time of Completion, Delays, Extension of Time”).

Pay Items

Item No.	Description	Unit	Base Bid Quantity	Bid Unit Price	Extended Price
GENERAL WORK					
1	Mobilization, Bonds & Insurance (3% MAX)	LS	1		
ROB GANDY FORCE MAIN					
2	Rob Gandy Force Main	LS	1		
NINTH STREET PS FORCE MAIN INTERCONNECTION					
3	Ninth Street PS Force Main Interconnection	LS	1		
SEWER REHABILITATION					
4	Cured In Place Pipe Lining 8-Inch (Heat Cured)	LS	1		
5	Cured In Place Pipe Lining 10-Inch (Heat Cured)	LS	1		

Item No.	Description	Unit	Base Bid Quantity	Bid Unit Price	Extended Price
6	Heavy Cleaning	LF	430		
7	Protruding Tap Removal	EA	10		
8	Point Repair 8-Inch DIP, 20' Length, 0'-8' Depth	EA	1		
9	Point Repair 8-Inch DIP, 20' Length, 8'-12' Depth	EA	1		
10	Point Repair 8-Inch PVC C900, 20' Length, 0'-8' Depth	EA	6		
11	Point Repair 8-Inch PVC C900, 20' Length, 8'-12' Depth	EA	4		
12	Point Repair 10-Inch DIP, 20' Length, 0'-8' Depth	EA	1		
13	Point Repair 10-Inch DIP, 20' Length, 8'-12' Depth	EA	1		
14	Point Repair 10-Inch PVC C900, 20' Length, 0'-8' Depth	EA	1		
15	Point Repair 10-Inch PVC C900, 20' Length, 8'-12' Depth	EA	1		
16	Cut in Wye Service Lateral by Point Repair - 8-Inch	EA	16		
17	Cut in Wye Service Lateral by Point Repair - 10-Inch	EA	1		
18	CIPP Service Lateral Seal 4-Inch, 70' Max.	EA	10		
19	CIPP Service Lateral Seal 6-inch, 70' Max.	EA	5		
20	Sewer Service Replacement < 8' Depth, 70' Max.	EA	40		
21	Cut-in Service Lateral Cleanout (4-Inch)	EA	20		
22	Manhole Ring and Cover Replacement with Standard Ring and Cover	EA	8		
23	Manhole Ring and Cover Replacement with Watertight Ring and Cover	EA	9		
24	Manhole Infiltration Dish	EA	20		
25	Manhole Vent	EA	1		
26	Manhole Bench/Invert Repair	EA	12		
27	Manhole Coating, up to 4' Diameter, 0 to 3 ft Depth	EA	9		

Item No.	Description	Unit	Base Bid Quantity	Bid Unit Price	Extended Price
28	Manhole Coating, up to 4' Diameter, 3 to 6 ft Depth	EA	11		
29	Manhole Coating, up to 4' Diameter, 6 to 8 ft Depth	EA	6		
30	Manhole Coating, up to 4' Diameter, 8 to 10 ft Depth	EA	3		
31	Remove Water Service from MH	EA	1		
32	Manhole Service Lateral Drop	EA	5		
33	Manhole Replacement with Polymer Concrete Manhole - 4' Dia., 4' - 8' Depth	EA	9		
34	Manhole Replacement with Polymer Concrete Manhole - 4' Dia., 8' - 12' Depth	EA	5		
35	Unsuitable Soil Removal and Replacement	CY	125		
36	Removal & Disposal of Abandoned Utilities	TON	1		
37	Abandon Utilities by Grout Fill	CY	4		
38	Construction Material Testing (CMT) (GC Article 30)	EA	1	\$7,000	\$7,000
Total of All Unit Price Bid Items				\$	

Proposal Signature Page

The undersigned further agrees that in the case of failure on his part to execute the said Contract, provide performance and payment bonds, and certificates of insurance within ten (10) consecutive calendar days after being given written notice of the award of Contract, the certified check, cash, or bid bond accompanying this bid shall be paid into the funds of the Owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash, or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

(Name of Firm or Corporation Making Bid)

WITNESS:

(Proprietorship, Partnership, or LLC)

By: _____
Signature

Name: _____
Print or Type

Title: _____
(Owner/Co-Partner/President/Vice President/Manager)

Address: _____

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

License No. _____

Federal I.D. No. _____

(CORPORATE SEAL)

Addendum received and used in computing bid:

Addendum No. 1 _____ Addendum No. 3 _____ Addendum No. 5 _____ Addendum No. 7 _____

Addendum No. 2 _____ Addendum No. 4 _____ Addendum No. 6 _____ Addendum No. 8 _____

SECTION 01 27 00
PAY ITEM DESCRIPTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pay item descriptions, for use in preparing bids.
- B. Measurement and payment criteria.
- C. Defect assessment and non-payment for rejected work.

1.2 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services, and incidentals; erection, application, or installation of an item of the Work; overhead and profit.
- B. Each pay item in the bid includes all work that is permanent and measurable. The bid for the pay item shall include the cost of all new material, labor, equipment, taxes, overhead, profit and all equipment and materials necessary and incidental to complete the work for each pay item.
- C. Incidental and necessary items are as follows, but not limited to inspections, material removal and disposal, restoration, vegetative pruning, dams, plugs, dewatering, and/or anything necessary to complete all pay items as directed.

1.3 PAY ITEM DESCRIPTION

- A. Pay items have been set up in the bid for all work that is permanent and measurable. The bid for each pay item shall include the cost of all new material, labor, equipment, and all else required to complete that pay item as specified. Payment for work will only be made after the work is complete and has been inspected by the Owner.
- B. The Bid includes the following abbreviations:
 - 1. LF = linear foot
 - 2. SY = square yard
 - 3. DAY= day
 - 4. EA = each
 - 5. LS = lump sum
 - 6. TON = ton
 - 7. CY = cubic yard
 - 8. AC = acre
 - 9. VF = vertical foot

1.4 PAY ITEMS

- A. Mobilization, Bonds & Insurance:

1. This item includes the cost to mobilize equipment, materials, and work forces to the project area as indicated on overview figure and special scheduling necessary to complete the project work tasks in an orderly manner. Mobilization will be for all work and operations which shall be performed or for costs incurred prior to beginning work. This will include costs associated with preparatory work and operations, including, but not limited to insurance and bond fees, etc. necessary for the prosecution of work.
2. Payment for this item shall not exceed 3% of the total bid price.
3. Payment will be made on a lump sum basis for the overall project.

B. Sanitary Sewer Force Mains:

1. Includes all materials, equipment, and labor required for pipe construction. Work shall be as specified and in accordance with the Drawings and specification.
2. Includes fittings, factory restrained joints, tied joint restraints, metal bars and bolts used in thrust restraint, tracer wire with appurtenances, and detection tape. This item includes all erosion control measures, excavation, stone bedding, sheeting, dewatering, supplying and installing materials, connections to pipe installed by horizontal directional drill, backfill and compaction, testing, coordination with existing utilities including locating and protecting existing utilities as required, temporary fertilizing, seeding and mulching, temporary patching of driveways, walkways, roadways, etc., immediately following construction and maintaining same until permanent repairs are made, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items.
3. Includes full restoration of all roads and driveways per the plans including pavement removal and replacement and shall include all costs in connection therewith, including cutting, removal, and disposal of old pavement; construction of aggregate base course, new pavement and all compaction required for pavement.
4. Includes furnishing, installing, inspecting and maintaining pavement markings, and related maintenance and protection of traffic.
5. Includes Temporary Bypass Plan & Pumping (if needed):
 - a. This item includes the cost to provide an approvable bypass pumping plan to Owner and to operate and maintain said pumping system for bypassing existing wastewater flow while performing the work in accordance with the specifications. In accordance with the NC Board of Examiners for Engineers and Surveyors, design plans and calculations for bypass pump systems is the practice of engineering, meaning the work shall be done by professional engineers and companies licensed to practice in North Carolina.
 - b. Bypass pumping of sewage flows shall include the mobilization and demobilization of all equipment. The price shall include, but not be limited to, pump cost/rental, fuel, hoses, maintenance, regular inspection, operation, etc.

6. Plug Valve with Valve Box and Appurtenances: Includes all materials, equipment, and labor required for valve installation. Work shall be as specified and in accordance with the specification.
 - a. This item shall include all costs necessary to install the specified valves and valve box, as indicated on the plans. All valves shall be installed in accordance with Owner's material specification manual, technical specification and standard details. Work shall include cutting and removal of pavement, removal and disposal of excess unsuitable material off site, excavation, backfill, compaction, installation, valve boxes, concrete protection rings, concrete collars, tracing wire, and all equipment, tools, labor, and incidentals necessary to complete the work.
7. Combination Air Release/Vacuum Valve Assembly:
 - a. Includes all materials, equipment, and labor required to install Combination Air Release/Vacuum Valve Assembly. Work shall be as specified and in accordance with the specification.
 - b. This item shall include all costs necessary to install the specified Combination Air Release/Vacuum Valve Assembly, as indicated on the plans. All Combination Air Release/Vacuum Valve Assembly shall be installed in accordance with Owner's material specification manual, technical specification, and standard details. Work shall include cutting and removal of pavement, removal and disposal of excess unsuitable material off site, excavation, backfill, compaction, installation, vault/manhole, vent, ring and cover, valve assembly and appurtenances, stone bedding foundation, dewatering, tracing wire, and all equipment, tools, labor, and incidentals necessary to complete the work.
8. Horizontal Directional Drill:
 - a. Includes all materials, equipment, and labor required to install horizontal directional drill. Work shall be as specified and in accordance with the specification.
 - b. Design, furnish and install the proposed piping alignment by horizontal directional drilling (HDD) construction methods, as shown on the drawings and in conformance with this specification. The work includes, but is not limited to, survey, design, excavation, dewatering, removal of all materials encountered in the horizontal directional drilling operations, disposal of all material not required in the work, pipe and pipe assembly including pressure testing prior to and following pull, tracer wire, cleaning, restoration, and incidentals as shown on the drawings and in accordance with the specification.
9. Steel Encasement via Bore and Jack:
 - a. Includes all materials, equipment, and labor required to install steel encasement via bore and jack. Work shall be as specified and in accordance with the specification.
 - b. Design, furnish and install the proposed piping alignment by jacking and boring construction methods, as shown on the drawings and conform to this specification. The

work includes, but not limited to, survey, sheeting and shoring design if necessary, excavation, dewatering, removal of all materials encountered in the jacking and boring operations, disposal of all material not required in the work, grouting bulkheads, testing, cleaning, restoration, and incidentals as shown on the drawings and in accordance with the specification.

10. Connection to Existing Force Main:

- a. Includes all materials, equipment, and labor required to connect to existing force main by installing fittings, accessories, and witness by Owner.
- b. Bid items include valves, fittings, factory restrained joints, tied joint restraints, and metal bars and bolts used in thrust restraint. This item includes asphalt cutting, removal and disposal, excavation, bedding, supplying and installing materials, backfill and compaction and testing, tracer wire and appurtenances, coordination with and location of existing utilities shall include costs of locating and uncovering the existing piping, properly draining the pipe as required, removing and disposing of existing piping as required, cutting the existing piping, the fitting for connection and any related materials indicated on the Drawings, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items.

11. Traffic Control Plan and Traffic Control:

- a. This item includes the cost to provide a traffic control plan and traffic control for local and NCDOT roads. Authority having jurisdiction shall approve the traffic control plan submitted. Traffic control to be provided based on the latest NCDOT Temporary Shoulder, Lane, or Road Closure Details.
- b. Road closures and detours shall be indicated on the traffic control plan and approved by the authority having jurisdiction.
- c. This item includes the cost to provide, operate and maintain variable (changeable) message sign for traffic control on local and NCDOT roads as required for traffic control and public information.

12. Payment for this bid item will be made on a lump sum basis.

C. Cured-In-Place Pipe Lining Installation (Heat-Cured):

1. Items include all materials, equipment, and work required to install cured-in-place pipe lining (CIPP). Work shall be as specified and in accordance with the specification.
2. Bid items include payment for preparing the existing sewer and performing pre- construction inspections including additional pre-cleaning and television inspection of the sewer as required prior to CIPP installation, supplying and installing the pipe lining, providing a watertight seal at the manhole-pipe interface, accessing sewers and manholes for lining installation as specified, performing post-rehabilitation television inspections, distributing project notices, coordination with and location of existing utilities, complete restoration of

all areas disturbed by the work, all erosion control measures, and for all else incidental thereto for which separate payment is not provided under other bid items. Payment will not be made until the final post-rehabilitation television inspections are submitted and reviewed by the Engineer. In addition, results of the CIPP tests for each liner shall be submitted within 30 days after the liner is installed or payment will be withheld.

3. This pay item includes transportation and dumping of debris removed from the sewer system at an approved facility.
4. Temporary Bypass Plan & Pumping:
 - a. This item includes the cost to provide an approvable bypass pumping plan to Owner and to operate and maintain said pumping system for bypassing existing wastewater flow while performing the work in accordance with the specifications. In accordance with the NC board of examiners for engineers and surveyors, design plans and calculations for bypass pump systems is the practice of engineering, meaning the work shall be done by professional engineers and companies licensed to practice in North Carolina.
 - b. Bypass pumping of sewage flows shall include the mobilization and demobilization of all equipment. The price shall include, but not be limited to, pump cost/rental, fuel, hoses, maintenance, regular inspection, operation, etc.
5. Traffic Control Plan and Traffic Control:
 - a. This item includes the cost to provide a traffic control plan and traffic control for local and NCDOT roads. Authority having jurisdiction shall approve the traffic control plan submitted. Traffic control to be provided based on the latest NCDOT Temporary Shoulder, Lane, or Road Closure Details.
 - b. Road closures and detours shall be indicated on the traffic control plan and approved by the authority having jurisdiction.
 - c. This item includes the cost to provide, operate and maintain variable (changeable) message sign for traffic control on local and NCDOT roads as required for traffic control and public information.
6. Payment for this bid item will be made on a lump sum basis.

D. Allowance - CIPP Field Performance Testing:

1. Item includes all materials, equipment, and work required for performing the specified CIPP product tests (flexural modulus, flexural strength, tensile strength and thickness). Direction from Engineer's representative is required for utilization of the allowance. Allowances will be paid based on the following:
 - a. Material testing contractor invoice plus 10 percent.

- b. The Bid Item for performing the CIPP tests includes payment for capturing the sample, labeling the sample as to the sewer segment and date of installation, cutting the samples for testing and providing a 1-inch-wide sample to the independent testing laboratory for testing, correspondence and coordination with the testing laboratory.
 - c. The CIPP testing shall include determining flexural strength, flexural modulus, tensile strength and thickness of each sample. These four separate individual tests make up one completed CIPP test.
- E. Heavy Cleaning Sewer Mains:
 - 1. Item includes furnishing all materials, equipment, and labor required to perform heavy cleaning and debris removal of sewer mains, including accessing the lines.
 - 2. Tuberculation Removal Sewer Mains:
 - a. Item includes furnishing all materials, equipment, and labor required to perform tuberculation removal of sewer mains, including accessing the lines.
- F. Protruding Tap Removal:
 - 1. Item includes furnishing all materials, equipment, and labor required to perform protruding tap removal of sewer mains, including accessing the lines.
 - 2. Payment will be made based on the number of protruding taps removed in accordance with the unit price bid.
- G. Point Repair:
 - 1. Includes all labor, materials, tools, equipment and incidentals, for performing point repairs to existing sewers, as determined by the Engineer including pipe, pipe fittings, couplings and adapters, concrete collars, excavation, embedment, backfill, removal, hauling away and lawful disposal of excess excavated materials, old piping materials and debris, connection to existing pipe and manholes, reconnection of existing service laterals, sedimentation and erosion control measures, bypass pumping, traffic controls, testing and any required retesting, restoration of disturbed areas (including restoration of paved areas), post-installation video inspection and any incidentals necessary to complete point repairs in a satisfactory manner.
 - 2. Point repairs shall be paid for at the unit price bid for each size and material.
 - 3. Cut in wye service lateral by point repair shall be paid for at the unit price bid for each size.
- H. CIPP Service Lateral Seal:
 - 1. Payment for this item will be full compensation for accessing the sewers and manholes as specified, locating existing service connections, sewer flow control, public notification, any required excavation and restoration to uncover cleanouts, sewer pipe cleaning, root removal, cutting & brushing service line connection (if necessary), installation of the lateral seal,

inspection, pre- and post- construction CCTV inspection, equipment retrieval, testing, and clean-up in accordance with the specifications.

2. Payment will be made based on the number of service laterals sealed in accordance with the unit price bid.

I. Sewer Service Replacement:

1. Items include all materials, equipment, and work required to replace sewer services. Work shall be as specified and in accordance with the specification and details.
2. Bid item includes payment for asphalt cutting, removal and disposal, excavation, removal and replacement of granite curb, bedding, supplying, and installing materials, backfill and compaction, coordination with and location of existing utilities, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items.
3. Payment will be made on the basis of the unit prices bid.

J. Cut-In Service Lateral Cleanout:

1. Item includes all materials, equipment, and work required to cut in a lateral cleanout where directed or required. Special effort shall be taken on placing the service lateral cleanout within existing rights-of-way or easements.
2. Item includes payment for installing a new cleanout into an existing lateral as needed for cleaning, CCTV inspection, CIPP lining, and future maintenance.
3. Item includes 4-inch lateral mains per details.
4. Payment will be made on the basis of the unit price bid.

K. Manhole Standard and Watertight Ring and Cover Installation:

1. Items include all materials, equipment, and work required to install manholes with standard or watertight ring and cover as noted on the Drawings and as directed by Engineer. Work shall be as specified and in accordance with the specifications.
2. Bid item includes payment for excavation, bedding, supplying, and installing materials, backfill, compaction, and testing, , coordination with and location of existing utilities, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items.
3. Payment will be made per each manhole ring and cover replaced.

L. Manhole Rehabilitation:

1. Includes all materials, equipment, and work required to install new inverts, benching, slides, and lateral drops. This item includes working in any location (unpaved areas or paved areas) for 4-foot and 5-foot diameter manholes with irregular inside dimensions.
2. Item includes pre-construction inspection of manholes, manhole cleaning, root removal and grease removal, other work required to prepare the manhole for rehabilitation, stopping active leaks and filling voids in the manhole wall or between brick layers, boot repair, bench/invert repair, frame and cover replacement, traffic control, complete restoration of all areas disturbed by the work, and all else incidental to the work.
3. Manhole rehabilitation shall be performed in a manner that conforms to details, specification Section TS 020 Gravity Sanitary Sewer System, and specification Section 33 01 37 Manhole Rehabilitation and Repairs. Plugging or blocking of the sewer flows shall be considered incidental to the work.
4. Payment for manhole ring and cover replacement will be made for each manhole ring and cover replacement at the unit price bid for standard and watertight ring and covers.
5. Payment for manhole infiltration dishes will be made for each manhole infiltration dish installed at the unit price bid.
6. Payment for manhole vents will be made for each manhole vent installed at the unit price bid.
7. Payment for manhole bench/invert repair will be made for each manhole in which bench/invert repairs are completed at the unit price bid.
8. Manhole interior lateral drops will be made for each manhole in which lateral drops are installed at the unit price bid

M. Manhole Coating:

1. Includes all materials, equipment, and work required to install a protective coating on existing manhole ceilings, walls, benches and inverts as specified. This item includes working in any location (unpaved areas or paved areas) for 4-foot and 5-foot diameter manholes with irregular inside dimensions.
2. This item includes pre-construction inspection of manholes, manhole cleaning, root removal and grease removal, other work required to prepare the manhole for coating including, but not limited to, stopping active leaks and filling voids in the manhole wall or between brick layers, furnishing and installing a protective coating inside the manhole sealing around the manhole wall/pipe interfaces, performing specified product tests and acceptance testing, accessing manholes, traffic control, complete restoration of all areas disturbed by the work, and all else incidental to the work.
3. Manhole protection shall be performed in a manner that conforms to specification Section TS 020 Gravity Sanitary Sewer System, and specification Section 33 01 37 Manhole Rehabilitation and Repairs. Plugging or blocking of the sewer flows shall be considered incidental to the work.

4. Payment will be made in accordance with the unit price bid.

N. Polymer Concrete Manhole Installation:

1. Items include all materials, equipment, and work required to install polymer concrete manholes with standard or watertight ring and cover as noted on the Drawings. Work shall be as specified and in accordance with the specifications.
2. Bid item includes payment for excavation, bedding, supplying, and installing materials, backfill, compaction, and testing, pipe connections, coordination with and location of existing utilities, bypass pumping, traffic control, complete restoration of all areas disturbed by the work, and for all else incidental thereto for which separate payment is not provided under other bid items.
3. Payment will be made per each polymer concrete manhole for the depth range of installation.

O. Unsuitable Material Undercut Excavation, Stone and Geogrid:

1. Should trench or excavation reveal unsuitable subgrade, this unit price item shall be used to remove and dispose existing material and then replace and compact new suitable material. The undercut depth required shall be determined on-site.
2. Payment will be based on cubic yards. Measurement shall be made after all existing material is removed and prior to placement and compaction of new material.
3. The unit prices bid shall include all costs in connection therewith, including hauling, disposal, new material, Geogrid, Stone, and compaction.

P. Demolition and Abandonment:

1. This item includes all materials, equipment, and work required for removal and disposal and abandonment of existing utilities, including excavation, removal, transport and disposal of abandoned utilities at approved facilities, abandonment of gravity sewer services and other utilities by capping and grout filling, as directed by Owner and Engineer, removal of pumps and controls, removal of pump enclosures, and electrical demolition. No separate payment will be made for tagging, protecting, and delivering to the Owner items designated for salvage.
2. Demolition work shall be in accordance with specification section 02 41 16 – Structure Demolition.
3. Payment will be made by ton of abandoned utilities removed and disposed.
4. Payment will be made by cubic yard of grout fill.

Q. Water Service Removal from Manhole:

1. Item includes furnishing all materials, equipment, and labor required to remove water service from manhole. If it is a dead line, Contractor to cut and cap water service outside of

manhole, patch manhole, and restore site to existing or better condition. If it is under pressure, Contractor shall cut the water service at main, and close corp stop at main, remove service from manhole, patch manhole, and restore site to existing or better.

2. Payment will be made in accordance with the unit price bid.

1.5 UNIT PRICES

A. Measurement of Quantities:

1. Weigh Scales: Inspected, tested, and certified by applicable State Weights and Measures Department within past year.
2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested, and certified by applicable State Department within past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
6. Measurement by Area: Measured by square dimension using mean length and width or radius.
7. Linear Measurement: Measured by linear dimension at item centerline or mean chord.
8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

B. Unit Price Schedule: Refer to Bid Form.

1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit price will be adjusted to new price at discretion of Owner.
- D. Defective Work will be partially repaired to instructions of Owner, and unit price will be adjusted to new price at discretion of Owner.

- E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
- F. Authority of Engineer to assess defects and identify payment adjustments is final.
- G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

PART 2 EXECUTION – NOT USED

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SECTION 33 01 37
MANHOLE REHABILITATION AND REPAIRS

PART 1 GENERAL

1.1 SCOPE

- A. The Work specified in this section shall include furnishing all labor, tools, equipment, and materials required to complete the various manhole repairs determined to be necessary. Manhole rehabilitation shall be accomplished by the application of materials that will improve the overall structural condition of the manhole. The intent of this portion of the work is to provide for aspects of sewer manhole rehabilitation and sealing using various procedures either singularly or in combination, including type of repair, methods of repair, materials and equipment as required for each manhole scheduled for rehabilitation.
1. Manhole Preparation: These work items include cleaning the manhole, sealing walls and patching the interior surfaces.
 2. Manhole Repairs – Critical Leak Areas: These work items include repairing leaks in the wall to base areas, pipe penetrations and manhole joints.
 3. Manhole Coating: This work item utilizes a spray applied calcium aluminate cementitious structural rehabilitation system.
 4. Frame and Cover Replacement: This work item includes the frame and cover replacement, securely fastening the manhole frame to the manhole, sealing and grouting.
 5. Manhole Removal and Replacement: This work item includes removing and disposing of the existing manhole, including base and installing a new manhole in the same excavated trench including new frame and cover and connections to existing sewers.
 6. Other Manhole Repairs: This work item includes installing new manhole vents to existing manholes, internal manufactured flexible frame seals, new invert and bench construction, manhole interior cleaning and debris removal.
- B. Prior to applying the manhole protective coating to existing manholes and all new manholes, the Contractor shall coordinate a meeting between the Owner, Engineer, Manhole Protective Coating Subcontractor, and Coating Supplier/Manufacturer to review rehabilitation requirements (e.g., surface preparation, coating application, cure time, etc.). No coating shall be applied to existing or new manhole surfaces until surface is prepared in accordance with the Coating Supplier/Manufacturer's recommendation and the surface is inspected and approved by both the Owner and the Coating Supplier/Manufacturer.

1.2 QUALITY ASSURANCE

- A. The lining material Manufacturer shall maintain a listing of competent contractors that have demonstrated requisite skill and training to be qualified applicators of their materials.
- B. Prior to project commencement, the Contractor must satisfy the Engineer that all Contractor's work crew personnel have performed satisfactory work in similar capacities elsewhere for a sufficient period of time to be fully qualified to properly perform the work in accordance with the requirements of the related specifications.

- C. Foreman shall have at least 4 years' experience with similar work and project conditions.
- D. Mortar mix must have at least seven (10) years of successful performance in similar applications and be supplied by an ISO 9001 certified manufacturer. Manufacturer's ISO 9001 certificate shall be submitted to Engineer and Owner.

1.3 SUBMITTALS

- A. The Contractor shall furnish detailed and complete data pertaining to the surfaces of the structure to be rehabilitated, the rehabilitation product, surface preparation and installation to the engineer for approval.
- B. Prior to initiating the work, the Contractor shall submit specific technical data with complete physical properties of the structure to be rehabilitated and the proposed product for the rehabilitation of the structure, as well as a specific plan for subsurface preparation.
- C. A certificate of "Compliance with Specifications" shall be furnished for all materials supplied.
- D. A work plan detailing flow control and application sequence.
- E. A safety plan to comply with OSHA standards and all regulations pertaining to the work including confined space entry.
- F. The Contractor shall submit shop drawings and other information as specified in accordance with Section TS 007 – Project Submittals: Requirements for submittals.
- G. Contractor Qualification
 - 1. The Qualification of the Manhole Rehabilitation Contractor shall be submitted. These qualifications shall include detailed description of the following:
 - a. Name, business address and telephone number of the Manhole Rehabilitation Contractor.
 - b. Name(s) of all supervisory personnel to be directly involved with Manhole Rehabilitation for this project.
 - c. The Contractor shall sign and date the information provided and certify that to the extent of his knowledge, the information is true and accurate, and that the supervisory personnel will be directly Involved with and used on this project: Substitutions of personnel and/or methods will not be allowed without written authorization of the Engineer.
 - d. Specialty technicians shall be certified by the equipment manufacturer and/or its authorized representative. Certifications shall be submitted to the Engineer
 - e. Upon request of the Engineer, the Contractor shall provide his references of previous project lists, including his customer's name, address, and telephone number.
 - f. Four years of previous related experience shall be required to be qualified in bidding this project.

- H. Construction Procedures
1. The Contractor shall submit written descriptions of the construction method(s) and equipment to be used and locations required for equipment and material access.

1.4 STORAGE AND HANDLING

- A. Mortar mix shall be stored with adequate provisions for the prevention of absorption of moisture. It shall be stored in a manner that will permit easy access for inspection and identification of each shipment.

PART 2 PRODUCTS

2.1 CEMENTITIOUS COATING SYSTEM MATERIALS (100% Calcium Aluminate System):

- A. 100% calcium aluminate repair mortars shall be a prepackaged mortar mix, including all cement, aggregates, and any required additives with the proper amount of potable water so as to produce concrete suitable for spray application. 100% calcium aluminate cementitious structural rehabilitation systems shall be suitable for use on all brick manholes, vented or non-vented, and in moderate corrosive environments.
- B. The addition of Portland cement, other aggregates, or any admixtures whatsoever to lining material is prohibited.
- C. The chemical composition of the cement portion as well as the aggregates of the mortar mix shall be as follows:

Al ₂ O ₃	CaO	FeO + Fe ₂ O ₃	SiO ₂
39-44%	35-39%	9-14%	5-7%

- D. The design properties of the mortar mix shall be as follows:

Compressive Strength (ASTM C109)	> 5,500 psi	24 hours
Flexural Strength (ASTM C293)	> 1,200 psi	24 hours
Splitting Tensile Strength (ASTM C496)	> 800 psi	24 hours
Slant Shear test (ASTM C882)	> 1,200 psi	24 hours
Shrinkage at 28 days (ASTM C596)	< 0.08% cured @ 90% relative humidity	
Freeze/Thaw after 300 Cycles (ASTM C666)	No visible damage after 300 cycles	

- E. The mortar mix shall be designed to withstand long-term exposure to a bacterially corrosive hydrogen sulfide environment that may be expected to produce a pH of 1 on normal Portland cement based concrete or typical brick and mortar surfaces.
- F. Water used in mixing shall be fresh, clean, potable water, free from injurious amounts of oil, acid, alkali, vegetable, sewage and/or organic matter. Water shall be considered as weighing 8.32 pounds per gallon.
- G. Where inflow or infiltration is observed within the structure after surface preparation is complete, a rapid setting crystalline enhanced hydraulic cement product specifically

formulated for infiltration control shall be used to stop minor infiltration flows in accordance with the manufacturer's recommendations. The material shall meet the following strength requirements:

Compressive Strength (ASTM C597B)	600 psi	(24 Hours)
	1,000 psi	(7 days)
Bond Strength (ASTM C321)	30 psi	(1 hour)
	80 psi	(1 day)

- H. Hydraulic cement shall be Preco Plug, Octocrete, Burke Plug, or Engineer approved equal.
- I. Where infiltration flows are more severe, pressure grouting may be required. The material for pressure grouting shall be Avanti A-220, DeNeef, Seal Guard II, or Engineer approved equal installed in accordance with the manufacturer's written instructions.

2.2 CEMENTITIOUS COATING SYSTEM MATERIALS (Blended Calcium Aluminate System):

- A. A blended calcium aluminate mortar (CAM) system shall be a blend of quartz silica, fibers, and calcium aluminate cement designed for areas of low to moderate hydrogen sulfide concentration.
- B. The addition of Portland cement, other aggregates, or any admixtures whatsoever to lining material is prohibited.
- C. The design properties of the blended calcium aluminate mortar mix shall be as follows:

Compressive Strength (ASTM C109)	> 6,730 psi	24 hours
Flexural Strength (ASTM C293)	> 655 psi	24 hours
Splitting Tensile Strength (ASTM C496)	> 650 psi	28 days
Slant Shear test (ASTM C882)	> 1,765 psi	28 days
Shrinkage at 28 days (ASTM C596)	< 0.0310%	
Freeze/Thaw after 300 Cycles (ASTM C666)	No visible damage after 300 cycles	

2.3 MODIFIED POLYMER BASED THREE LAYER COATING SYSTEM MATERIALS (FOR USE ON EXISTING MANHOLES IN CORROSIVE MANHOLES)

- A. The materials to be utilized in the lining of manholes shall be designed and manufactured to withstand the severe effects of hydrogen sulfide in a wastewater environment. Manufacturer of corrosion protection products shall have long proven experience in the production of the lining products utilized and shall have satisfactory installation record. ***Polymer Based Coating System shall be used where existing manholes exhibit corrosion deterioration as approved by Engineer and/or Owner's Construction Project Administrator or contained in highly corrosive environments.***
- B. Equipment for installation of lining materials shall be high quality grade and be as recommended by the manufacturer.

- C. All material and installation shall be furnished by and coordinated with one supplier/manufacturer.
- D. The lining system to be utilized for manhole structures shall be a multi-component stress skin panel liner system as described below:

1. Liner

<u>Installation</u>	<u>Liner</u>
Moisture barrier	Modified polymer
Surfacer	Polyurethane/polymeric blend foam
Final corrosion barrier	Modified polymer

- 2. Modified polymer shall be sprayable, solvent free, two-component polymeric, moisture/chemical barrier specifically developed for the corrosive wastewater environment.
- 3. Polyurethane Rigid Structure Foam, low viscosity two-component, containing flame retardants.
- 4. Total thickness of multi-component liner system shall be a minimum of 500 mils.

2.4 POLYMORPHIC RESIN LINER SYSTEM

- A. One coat of a prime coat (10-25 mils thick), intermediate coat (75-150 mils thick), and a final coat (10-25 mils thick).
- B. Polymorphic resin liner coatings shall be as manufactured by Zebron, Raven Lining System, SEWERKOTE Duramer 1030, Warren Environmental S-301, Sherwin Williams Sherflex Elastomeric, Sherwin Williams Dura-Plate 6100 or approved equal.

2.5 MANUFACTURED INTERNAL MANHOLE FRAME SEALS

- A. The flexible sleeve portion of the seal shall be extruded or molded from a high-quality rubber compound conforming to ASTM C923 Table 1, with a minimum thickness of 3/16 inch. The sleeve shall have an unexpanded vertical height sufficient to seal the entire grade adjustment area and shall be pleated to allow for vertical and horizontal movement. Any extensions used in conjunction with the sleeve to increase chimney coverage shall be manufactured of the same material in conformance with ASTM C923, Table 1.
- B. Expansion bands used for compressing the sleeve and extensions against the manhole and casting surfaces shall be one-piece, 16-gauge ASTM A240, Type 304 stainless steel, minimum 1-3/4 inch width, with a minimum adjustment range of 2 inches more than the manhole inside diameter. Stainless steel locking mechanism of studs and nuts shall comply with ASTM F593 and ASTM F594, Type 304.
- C. The installed internal seal or its appurtenances shall not extend far enough into the manhole opening to prevent or unduly restrict manhole entry.

2.6 INFILTRATION CONTROL MATERIAL

A. Prior to installing the manhole lining system, active infiltration shall be controlled according to the specifications of the lining manufacturer. Infiltration control materials shall be rapid-setting, high early strength, hand applied cementitious material for stopping infiltrating water and making repairs to concrete, brick or other masonry constructed manholes. The material shall be non-shrinking, non-metallic and non-corrosive. It shall be formulated at the factory and supplied in factory sealed and labeled pre-measured containers. The material shall be compatible with the lining material to be used. The material shall have the following minimum characteristics:

1.	Compressive Strength	ASTM C109	600 psi at 1 hour 2,400 psi at 24 hours
2.	Expansion	ASTM C827	0.10 percent
3.	Set Time	ASTM C191-9245	to 60 seconds

B. Product shall be Permacast-Plug as manufactured by Action Products Marketing Corp., Strong-Plug by Strong Company, Preco-Plug by Fosroc, Inc. or approved equal.

2.7 PATCHING MATERIAL

A. Voids in the existing manhole walls or damaged inverts must be repaired prior to installing the manhole lining system. The patching material shall be a rapid setting, high early strength, corrosion resistant hand mixed and hand applied cementitious material intended for filling voids and repairing inverts in concrete, brick or other masonry constructed manholes. It shall be formulated in the factory and supplied in factory sealed and labeled pre-measured containers. The material shall be compatible with the lining material to be used. The material shall have the following minimum characteristics:

1.	Compressive Strength	ASTM C109	600 psi at 1 hour 2,400 psi at 24 hours
2.	Expansion	ASTM C827	0.10 percent
3.	Set Time	ASTM C191-9245	to 60 seconds

B. Product shall be Permacast-Patch as manufactured by Action Products Marketing Corp., Strong-Seal QSR by Strong Company, Preco-Patch by Fosroc Inc., or approved equal.

2.8 VENT PIPING – EXISTING SANITARY SEWER MANHOLES

A. Provide and install vents on existing precast or brick manholes where shown on the Contract Drawings. The manhole vents shall be galvanized steel pipe, 4-inch minimum inside diameter. “Candy cane” vent stacks on sewer manholes must be “factory” fabricated and “hot dipped” galvanized, NOT field fabricated and galvanized. Stainless steel Schedule 304 and ductile iron flanged pipe can also be used. Field paint “Charcoal” Gray steel pipe.

PART 3 EXECUTION

3.1 CONSTRUCTION SITE ACCESS

- A. The Contractor shall be responsible for establishing, stabilizing and maintaining all temporary construction access to easements, off-road and remote locations for the purposes of manhole repair/rehabilitation operations for the duration of construction including temporary grading, stabilizing, dewatering and all else required to establish and maintain access to and along sewer easements, off-road and remote construction sites.
- B. All work required under this section (3.1.A) shall not be measured for payment and shall be considered incidental to the manhole repair/rehabilitation work in these areas.

3.2 COATING SYSTEM

- A. Nozzlemen shall be qualified by having had similar work experience.
- B. Applicator's job foreman shall operate the mixing/placing equipment and direct the work of mixing crew personnel. Applicator's work crew shall also maintain proper line pressures throughout the mixing/placing equipment to ensure the necessary consistent nozzle velocity. Applicator's work crew shall further see that all material fed to the nozzle is uniformly fed through this equipment.
- C. Equipment shall be of spray type and approved by the material manufacturer. Alternate equipment may be utilized provided it meets the performance requirements of the specification. All equipment must be kept in operating condition and good repair.
- D. The Contractor shall provide all equipment necessary to individually gauge, control, and monitor the actual amounts of all component materials necessary to complete the lining installation. The type of equipment and methods used to gauge, control, and monitor component materials shall be subject to approval by the Engineer and Manufacturer.
- E. All lining materials shall be thoroughly mixed by mechanical means to ensure all agglomerated particles are reduced to original size or removed prior to placement into the application equipment (i.e., the hopper).
- F. Each batch of material should be entirely discharged before recharging with fresh material. Mixing equipment shall be cleaned at regular intervals to remove all adherent materials.
- G. The addition of water to the mix shall be in strict accordance with the Manufacturer's recommendations.
- H. Re-mixing or tempering shall not be permitted. Rebound materials shall not be reused.
- I. The Contractor shall perform all work in strict accordance with all applicable OSHA Standards. Particular attention is drawn to those safety requirements involving man entry in confined spaces.

- J. Flow control shall be exercised as required to ensure that no flowing sewage comes into contact with sections of the manhole under repair.
- K. Prior to beginning work, the Engineer will visually review the manhole and confirm the repair procedure indicated on the Work Order.

3.3 SEQUENCE

- A. Eliminate all sources of groundwater infiltration and voids in walls.
- B. Rehabilitate all interior surfaces including walls, ceilings and floors in accordance with specification and nature of the sub-surfaces.
- C. Provision to "cure" the installed lining material.
- D. Provision to "test" lining and structural rehabilitation materials.
- E. Divert flow back to lined structure and remove flow control devices.

3.4 COORDINATION

- A. Ensure the operating air pressure is uniform and provides adequate nozzle velocity for proper compaction.
- B. Continuously regulate the water content so that the applied materials consistently achieve proper compaction with a low percentage of rebound and no visible "sag".
- C. Ensure that the installation equipment nozzle is held at the proper distance away from and as nearly perpendicular to the prepared sub-surface as the working conditions will permit to secure maximum material compaction with minimum rebound and no visible "sag".
- D. Follow a sequence routine that will fill corners with adequately compacted material applied at a maximum practicable layer thickness.
- E. Determine necessary operating procedures for placement in confined spaces, extended distances or around unusual obstructions where placement velocities and mix consistency may need to be adjusted.
- F. Direct the crew as to when to start and stop the flow of materials during installation and to immediately stop all work when material is not arriving uniformly at the nozzle.
- G. Ensure that slough pockets are removed and prepared for installation of replacement material.
- H. Bring the installed materials to established finished elevations in a neat and timely manner and within established tolerances.

- I. During progress of the work, adjacent areas or grounds which may be permanently discolored, stained or otherwise damaged by dust and rebound material, shall be adequately protected and, if contacted, shall be cleaned by early scraping, brushing or washing as the surroundings permit.

3.5 PREPARATION

- A. Ensure all sub-surfaces are clean and free of laitance, loose material, residue and all existing coating and lining materials. Respond to inflow and infiltration defects.
- B. Perform surface preparation in accordance with ACI RAP-3 “Spall Repair by Low Pressure Spraying” and ACI 546R “Concrete Repair Guide”.
- C. Sub-surfaces shall be thoroughly saturated with water prior to the application of the lining materials. In no instance shall shotcrete be applied in an area where running water exists.

3.6 APPLICATION

- A. Lining material shall not be applied to a frozen surface or to a surface that may freeze within 24 hours of application. Frozen conditions shall be defined as ambient temperatures of 32 degrees Fahrenheit or below.
- B. Sequence of application may be from bottom to top or vice versa if rebound is properly removed.
- C. Application shall be from an angle as nearly perpendicular to the surface as practicable, with the nozzle held at least 1 foot from the working sub-surface (except in confined control). If the flow of material at the nozzle is not uniform and slugs, sand spots, or wet sloughs result, the nozzleman shall direct the nozzle away from the work until the faulty conditions are corrected. Such defects shall be replaced as the work progresses.
- D. Application shall be suspended if:
 - 1. Air velocity separates the cement from the aggregate at the nozzle.
 - 2. Ambient temperature approaches freezing and the newly placed liner cannot be protected and insulated.
- E. The time interval between successive layers of material application must be sufficient to allow “tackiness” to develop but not final set.
- F. Construction joints within a manhole shall be avoided. In the event a construction joint is necessary and approved by the Engineer, it shall be sloped off to a thin, clean, regular edge, at a 45-degree angle. Prior to placement of the adjoining materials, the sloped portion and adjacent applied material shall be thoroughly cleaned as necessary, then moistened and scoured with an air jet.
- G. After the body coat has been placed, the surface shall be trued with a thin-edge screed to remove high areas and expose low areas. Low areas shall be properly filled with additional material to insure a true, flat surface.

- H. For manhole applications, the minimum thickness of application shall be a ½-inch cover over all surfaces. For wet wells, the minimum thickness shall be a 1-inch cover over all surfaces.
- I. For manhole applications in traffic areas, the liner application shall extend from the bottom of the manhole to 1-inch below the frame.

3.7 CURING

- A. If the material has been applied and furnished in accordance to the specifications, and it has been determined that the environment is not moist enough for natural curing, the Contractor will be required to apply a curing compound to all coated surfaces. Maximum recommended curing time is 48 hours.
- B. Curing compound shall meet the requirements of ASTM C309 and have the approval of the lining material Manufacturer and the Engineer prior to use.
- C. Moist curing may also be used in lieu of curing compound. If moist curing is selected, it should be implemented just after the notice of uniform heat generation of the installed lining. Moist curing can consist of the use of soaker hoses, water sprinklers, or vapor/misting machines. Regardless of delivery method, moist curing should continue for a minimum of 18 hours.

3.8 WARRANTY

- A. Manhole protective coating shall have an extended warranty on material and workmanship of ten (10) years from date of substantial completion/Owner acceptance. Should coating fail within the extended warranty period, the Contractor shall repair all defects and provide all required materials, equipment (e.g., bypass pumping) and labor to perform the repairs at no additional cost to the Owner. The repair shall then be warranted for an additional 2-year period.

3.9 MANHOLE FRAME AND COVER REPAIRS (REPLACEMENT AND RAISING)

- A. Realign Manhole Casting (Frame): This shall be accomplished by excavating as necessary, lifting off the frame, thoroughly cleaning its bottom bearing surface, coating it with asphalt paint similar to the original coating and removing the old mortar from the top of the cone and replacing it with a 2-inch (nominal) layer of new mortar consisting of one part Portland cement to three parts of clean, washed sand, mixed with an adequate amount of water and carefully sealing the frame in its correct position. Realignment may be horizontal or vertical. Where vertical alignment is required, one (1) or two (2) layers of brick or concrete grade rings may be required in order to raise the manhole frame and cover to the existing grade elevation.
- B. Replace Manhole Frames and Covers: Where identified by the Engineer, cast iron rings and covers shall be replaced by the Contractor. The Contractor shall remove and replace the entire assembly with a new frame and cover. The frame shall be set on the manhole cone as

described in Paragraph A entitled "Realign Manhole Casting (Frame)" above and vertically adjusted as required to match the existing grade. In off-road unpaved areas, the frame shall be securely anchored to the top of the manhole cone section or ring with a minimum of four (4) bolts per frame and sealed.

- C. Raising Manhole Frames and Covers: Where identified by the Engineer, the manhole frames and covers shall be replaced and raised to a specified height above grade. The Contractor shall remove and dispose of the existing manhole frames and covers and replace the entire assembly with a new frame and cover. The frame shall be set on the manhole cone as described in Paragraph A entitled "Realign Manhole Casting (Frame)" above and vertically adjusted as required.
- D. Repair of Manholes Requiring Excavation:
1. In Paved Areas:
 - a. The removal of the manhole frame shall be accomplished by making a square cut of sufficient size in the pavement.
 - b. Material in the exposed area shall be excavated to a sufficient depth to permit the required repairs. All excess materials including pavement shall be properly disposed of off-site.
 - c. Backfill material shall be in accordance with current NCDOT Standards.
 - d. Backfill shall be replaced in 12-inch lifts and compacted to prevent settlement and to restore the area to an equal or better condition. Backfill shall not cover the manhole.
 - e. New concrete or asphalt shall conform to the existing pavement, shall be placed to the same elevation and grade, and shall have a thickness equal to or greater than the existing pavement.
 - f. Any pavement deemed unsatisfactory or not performing to the requirements of these specifications shall be replaced at no additional expense to the Owner.
 2. In Unpaved Areas:
 - a. Only necessary excavation around the manhole to be repaired shall be performed.
 - b. Material in the exposed area shall be excavated to a sufficient depth to permit the required repairs.
 - c. Backfill shall be replaced in 12-inch lifts and compacted to prevent settlement and to restore the area to an equal or better condition. Backfill shall not cover the manhole.
 - d. Any private property removed for access to the manhole shall be replaced by the Contractor in existing or better condition.
 - e. All manhole frames outside of paved surfaces shall be bolted to the cone section or ring with a minimum of four (4) bolts per frame.
 3. The Contractor shall return all salvageable frames and covers to a location to be determined by the Cape Fear Public Utility Authority. All frames and covers deemed unsalvageable shall be legally disposed of off-site
 4. It shall be the responsibility of the Contractor, at no additional cost to the Owner, to repair any damage to the chimney or corbel caused by the removal of the existing manhole frame or cover.

5. The Contractor shall take all necessary precautions to prevent falling debris from entering the manhole and/or damaging the bench or invert. Any deteriorated portions of the manhole chimney and corbel shall be removed and properly disposed of off-site.
6. The chimney and corbel shall be repaired or rebuilt with new brick or precast concrete grade rings as appropriate to reconstruct the chimney to the height needed for the frame and cover to meet the required grade. The manhole frame shall be sealed using either a manufactured or applied sealing method.

3.10 OTHER MANHOLE REPAIRS

- A. Manhole Invert Construction: Where identified by the Engineer, the Contractor shall construct new inverts in existing manholes. The invert channels shall be constructed with a width equal to that of the effluent pipe, height to the springline and invert benches from that point upward at a 60-degree angle to the manhole walls. The invert shall be brushed and troweled so that a minimal energy loss occurs in the manhole from invert roughness. Changes in direction of flow shall be made by forming a smooth radius sized to allow adequate access by TV and/or maintenance equipment. "Bowl" shaped inverts will not be allowed. Extend seal 3 inches below the lowest adjustment ring.
- B. Manhole Interior Cleaning and Debris Removal: Where identified by the Engineer, the Contractor shall clean existing sanitary sewer manholes with a high velocity water jet and remove all grease, dirt, sludge, roots and all other build-up and debris and legally dispose of removed materials of project site. All roots not removed by water jet shall be cut flush with manhole walls and removed.
- C. Manhole Removal and Replacement: Where identified by the Engineer, the Contractor shall excavate and properly remove and dispose of the existing manhole, including base frame and cover and replace with a new precast concrete manhole and sub-base as specified in Section TS 020 – Gravity Sanitary Sewer System, including construction of any drop connections, connections to existing sewer pipe, backfilling, compaction, testing and all else required for a proper and complete installation.
- D. Sewer Service Inside Drop: Where identified by the Engineer, the Contractor shall construct inside drop for services with greater than 2.5 feet of distance from the manhole bench. Inside drop material shall be schedule 80 PVC of the same size as the influent service. The service inside drop shall extend from the influent service by a schedule 80 PVC cross. The vertical pipe shall be schedule 80 PVC supported by 316 stainless steel straps spaced at no more than 30 inches between straps. Straps shall be ¾ inch thick stainless steel with ½ inch bolts affixed to manhole wall by wedge anchors. A 90-degree bend will direct flow to the manhole trough.

3.11 MANUFACTURED INTERNAL MANHOLE FRAME SEALS

- A. Install internal sleeves and extensions according to the manufacturer's guidelines.
- B. The contact surfaces for the sleeve and extensions shall be reasonably clean and smooth, circular and free from excessive voids or defects.

- C. Extend seal 3 inches below the lowest adjustment ring.
- D. Extend seal to 2 inches above the flange of the casting for a standard two-piece casting, or 2 inches above the top of the base section of the casting for an adjustable three-piece casting.
- E. Use multiple seals if necessary.
- F. Install expansion bands to lock the rubber sleeve or extension into place and to provide a positive watertight seal. Once tightened, lock the bands into place. Use only manufacturer recommended installation tools and sealants.

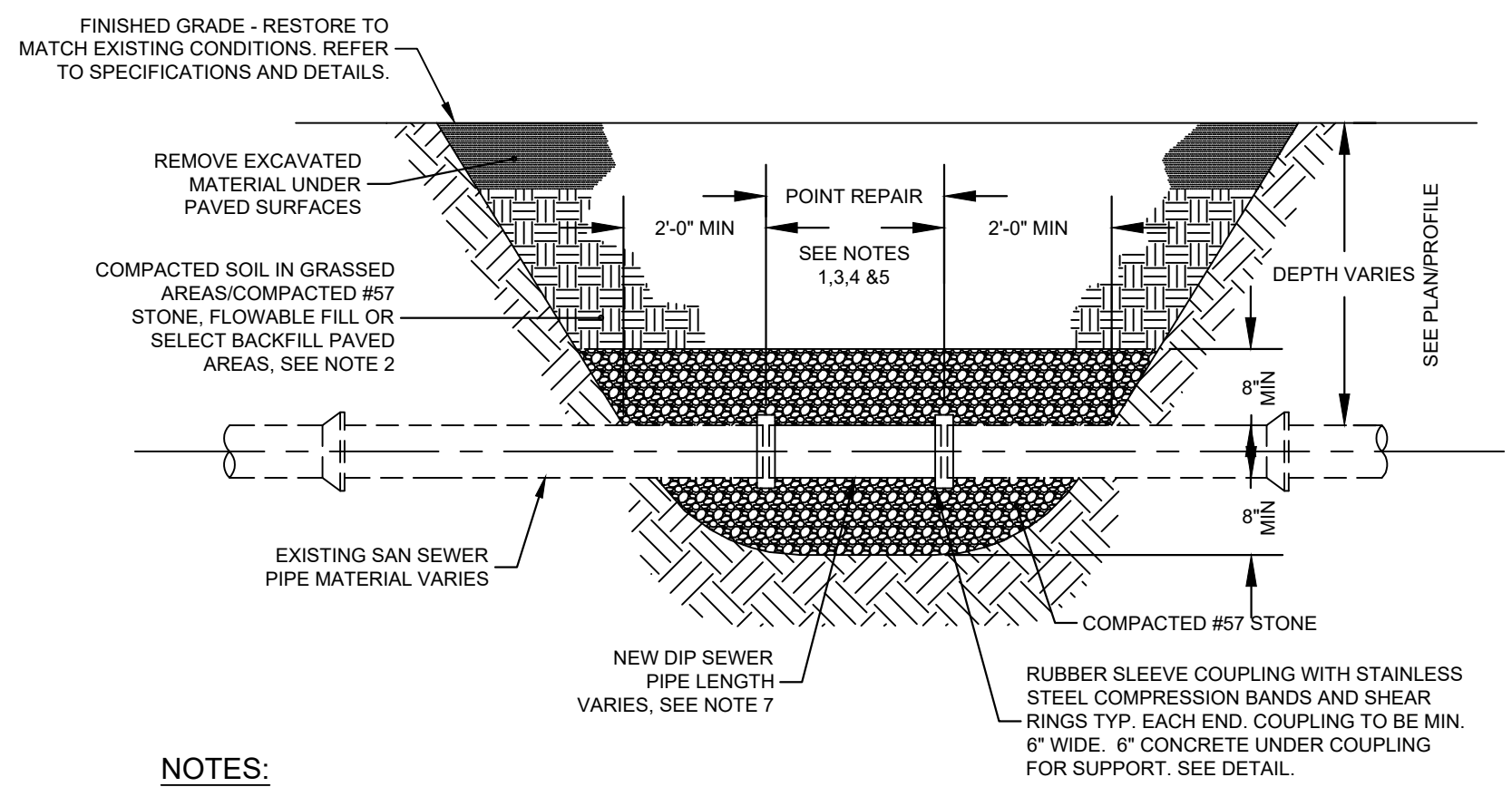
3.12 FIELD QUALITY CONTROL

- A. Test mortar materials used on the project during placement. Specific materials recommended by the Engineer shall then be tested.
- B. Test for adverse chemical conditions that may hinder overall product performance.
- C. After completion of manhole wall sealing or rehabilitation, test manholes for leakage per Specification Section TS 020 – Gravity Sanitary Sewer System.
- D. The cured epoxy lining shall be spark tested for pinholes with a spark tester set at 10,000 volts minimum (100 V per mil). All pinholes shall be repaired according to manufacturer recommendations. All pinholes shall be marked off on surface areas containing pinholes to a point 6 inches beyond all pinholes and patch with epoxy to a minimum additional thickness of 40 mils. Blisters and uncured lining shall be completely removed and the areas recoated with epoxy to a point 6 inches beyond the repair areas at a minimum thickness of 100 mils.
- E. Manhole frame seals shall be visually inspected after installation to ensure that the seal is properly positioned, tight against the manhole and frame surfaces, that no voids or leakage points exist and that the bands are securely locked in place. Any seals failing this test shall be reworked as necessary and retested at no additional cost to the Owner. Any seals not passing this visual inspection may, at the Contractor's option, be tested for leakage using a method approved by the Engineer.

END OF SECTION

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NOTES:

- THE SEQUENCE OF WORK FOR PERFORMING POINT REPAIRS SHALL BE AS FOLLOWS:
 - BYPASS PUMP FLOWS AROUND POINT REPAIR SEGMENT.
 - EXCAVATE TO 8" BELOW EXISTING SEWER.
 - NEATLY CUT EXISTING SEWER AT EACH END OF POINT REPAIR AND REMOVE EXISTING SEWER COMPLETELY.
 - INSTALL #57 STONE TO SEWER INVERT ELEVATION AND COMPACT.
 - INSTALL NEW DIP SEWER AT A CONSTANT SLOPE BETWEEN THE TWO EXISTING PIPE ENDS, CONNECT THE NEW SEWER TO THE EXISTING WITH RUBBER SLEEVE COUPLINGS. REMOVE STONE BEDDING AS REQUIRED TO INSTALL PIPE AND COUPLINGS AND FILL VOIDS UNDER PIPE WITH STONE.
 - RETURN FLOW THROUGH PIPE.
 - BACKFILL AND COMPACT AS SHOWN.
- UNDER PAVED SURFACES ONLY, CONTRACTOR SHALL REMOVE EXCAVATED SOIL AND DISPOSE OF IT OFFSITE. CONTRACTOR SHALL IMPORT SELECT BACKFILL OR PIT GRAVEL FOR BACKFILLING FROM TOP OF #57 STONE TO PAVEMENT SUBGRADE (FOR CITY STREETS WHERE EXCAVATED MATERIALS IS DEEMED UNSUITABLE) AND FLOWABLE FILL (FOR NC DOT ROADS).
- SERVICE LATERALS LOCATED WITHIN POINT REPAIR SEGMENTS SHALL BE CONNECTED TO NEW SEWER WITH AN INLINE DIP WYE.
- LENGTH OF POINT REPAIR WILL BE DETERMINED BY THE CONTRACTOR AND/OR THE ENGINEER AFTER REVIEWING THE TELEVISION INSPECTION TAPES AND LOGS. THE CONTRACTOR SHALL EXTEND POINT REPAIRS IN THE FIELD AS NECESSARY AND APPROVED BY THE ENGINEER TO CONNECT TO SOLID PIPE. LENGTHS SHOWN ON DRAWINGS ARE ANTICIPATED TO BE MAXIMUM LENGTH OF REPLACEMENT.
- THE CONTRACTOR SHALL USE A TRENCH BOX OR SHEETING AND SHORING IN ACCORDANCE WITH OSHA REGULATIONS TO SUPPORT THE TRENCH WALLS DURING THIS WORK. THE CONTRACTOR WILL NOT BE ALLOWED TO SLOPE TRENCH WALLS.
- REFER TO DETAILS FOR CONNECTING TO MANHOLES.
- ALL PIPE USED FOR POINT REPAIRS SHALL BE DUCTILE IRON PIPE (DIP) UNLESS OTHERWISE NOTED.

TYPICAL POINT REPAIR

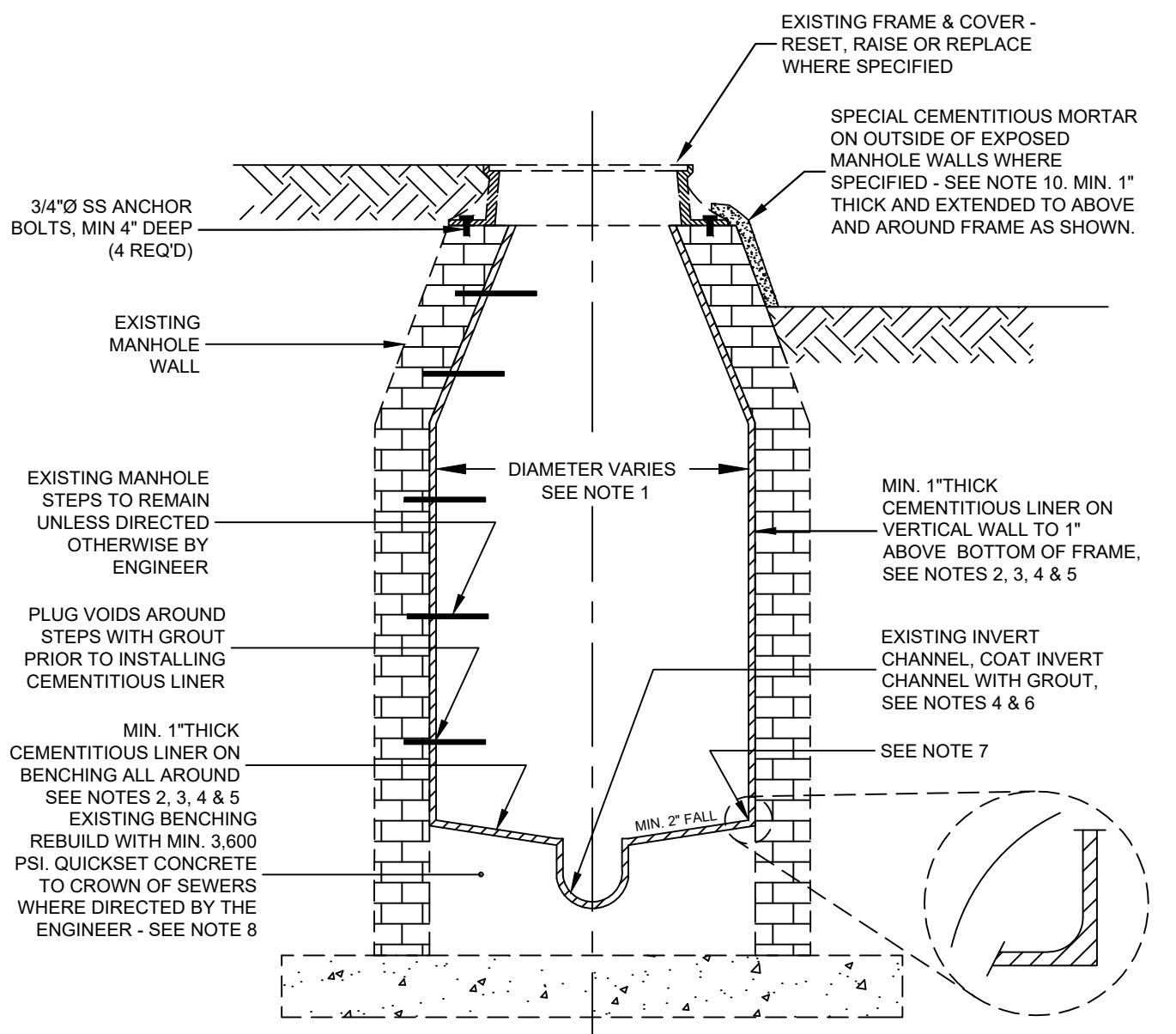
NOT TO SCALE

NOTES:

- MANHOLE SHOWN IS A TYPICAL SHAPE. HOWEVER, MANHOLE SHAPES WILL VARY. CONTRACTOR SHALL DETERMINE ACTUAL SHAPE.
- BID ITEM IS ON COATING EXISTING 4-FOOT DIAMETER MANHOLE WITH HYDROGEN SULFIDE RESISTANT CEMENTITIOUS LINER.
- CEMENTITIOUS LINER SHALL NOT BE INSTALLED UNTIL ALL MAIN SEWER, SERVICE LATERAL WORK WITHIN THE MANHOLE, AND OTHER MANHOLE REHABILITATION WORK IS COMPLETED.
- CONTRACTOR SHALL PROPERLY PREPARE SURFACE PRIOR TO LINING IN STRICT ACCORDANCE WITH THE LINING MANUFACTURER'S RECOMMENDATIONS. ALL MATERIAL REMOVED DURING THE PREPARATORY WORK INCLUDING PRESSURE CLEANING SHALL BE REMOVED FROM THE MANHOLE AND DISPOSED OF OFFSITE - NO MATERIAL SHALL BE ALLOWED TO ENTER THE SEWERS. IN ADDITION, NO CHEMICALS USED FOR CLEANING OR OTHER OPERATIONS SHALL BE ALLOWED TO ENTER THE SEWER. CEMENTITIOUS LINING SHALL BE MONOLITHICALLY SPRAY APPLIED IN ONE PASS AND TROWELED SMOOTH AFTER APPLICATION.
- CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED WHILE REHABILITATING MANHOLES. BYPASS PUMPING MUST BE PERFORMED WHEN COATING THE INVERT CHANNELS WITH GROUT. NO MATERIAL SHALL BE ALLOWED TO ENTER THE SEWERS. CONTRACTOR MUST SUBMIT BYPASS PUMPING PLAN FOR REVIEW BY THE ENGINEER.
- PROVIDE ADDITIONAL CEMENTITIOUS MATERIAL AS NECESSARY TO PROVIDE A MINIMUM 2" FALL FROM THE MANHOLE WALL TO THE INVERT CHANNEL. ANY AND ALL ADDITIONAL CEMENTITIOUS MATERIAL REQUIRED TO PROVIDE THE 2" FALL SHALL BE INCIDENTAL TO THE WORK AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CEMENTITIOUS COATING. THE CONTRACTOR IS ADVISED THAT MOST OF THE EXISTING BENCHES ARE FLAT. PROVIDE CHANNEL IN BENCHING FOR SEWERS ENTERING MANHOLES ABOVE BENCHING. CHANNEL TO PROVIDE SMOOTH TRANSITION TO MAIN INVERT CHANNEL.
- COAT INVERT CHANNELS WITH A QUICKSET NON-SHRINK GROUT TO PROVIDE A CONSTANT SLOPE BETWEEN INLET AND OUTLET SEWERS WHEN SPECIFIED/REQUIRED BY THE ENGINEER. PROVIDE ADDITIONAL MATERIAL AS NECESSARY TO PROVIDE A UNIFORM INVERT CHANNEL THROUGH THE MANHOLE. THE WIDTH OF THE UNIFORM CHANNEL SHALL BE EQUAL TO THE INCOMING AND OUTGOING PIPE DIAMETERS. THE FINISHED CHANNEL SHALL BE SMOOTH AND FREE OF BURRS THAT WILL CATCH TOILET PAPER, DEBRIS, RAGS, ETC. SEE NOTE 8.
- AT WALL/BENCH INTERFACE, INSTALL ADDITIONAL CEMENTITIOUS MATERIAL TO PROVIDE A SMOOTH TRANSITION FROM THE WALL TO THE BENCH AS SHOWN. MATERIAL SHALL BE MONOLITHICALLY APPLIED WITH THE WALL AND BENCH MATERIAL.
- THE MANHOLE IS ANTICIPATED TO REQUIRE ITS BENCH AND INVERT CHANNEL TO BE REBUILT. THE ENGINEER WILL DETERMINE SUCH WORK BASED ON MANHOLE INSPECTIONS. RE-BUILDING MAY BE REQUIRED IF THERE IS NO BENCHING, AND NO DEFINED INVERT CHANNEL OR IF THE EXISTING INVERT CHANNEL IS MORE THAN 6 INCHES WIDER THAN THE INCOMING AND OUTGOING PIPE DIAMETERS. EXISTING INVERT CHANNELS THAT ARE LESS THAN 6 INCHES WIDER THAN THE INCOMING/OUTGOING PIPE DIAMETERS SHALL BE NARROWED TO PROVIDE A UNIFORM CHANNEL PER NOTE 6 AS PART OF THE MANHOLE REHABILITATION WORK AND AT NO ADDITIONAL COST. BENCHES AND INVERTS SHALL BE IN ACCORDANCE WITH STANDARD MANHOLE CONSTRUCTION.

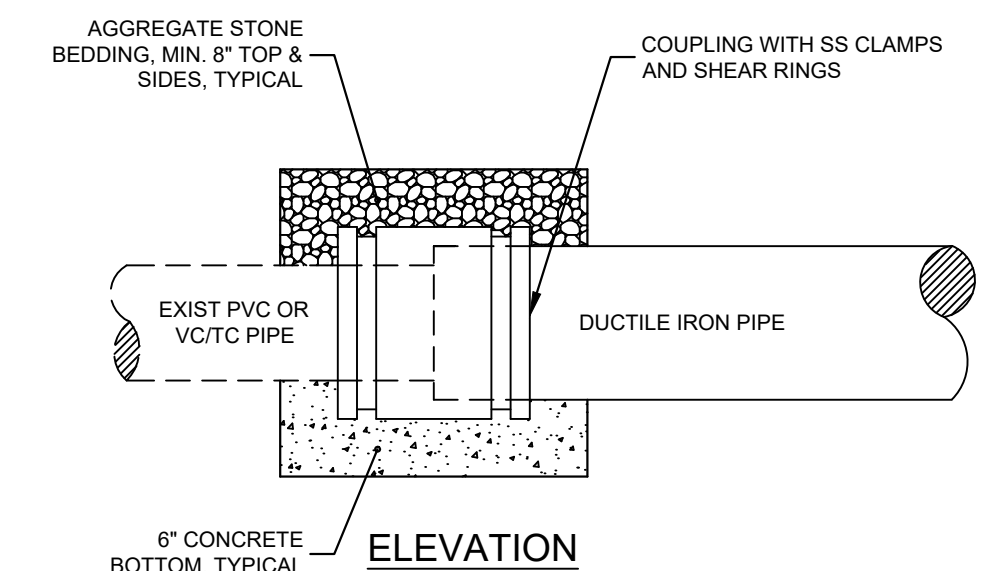
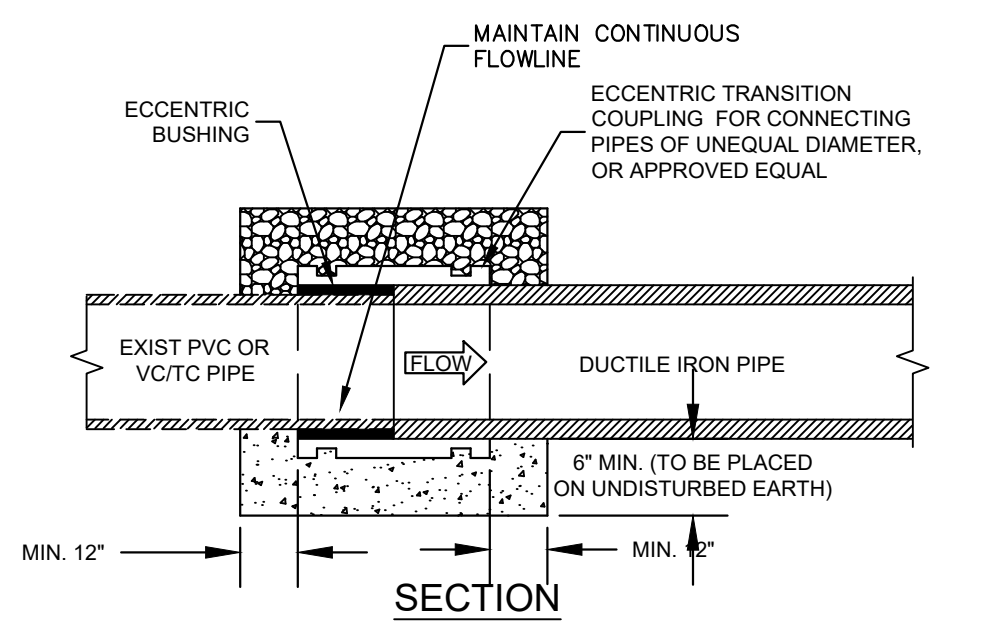
10. THE ENGINEER WILL SPECIFY MANHOLES TO RECEIVE AN EXTERIOR COATING OF MORTAR. THE MORTAR SHALL BE SPECIALLY DESIGNED FOR INSTALLATION ON VERTICAL EXPOSED SURFACES AS RECOMMENDED BY THE MORTAR MANUFACTURER. THE MORTAR SHALL BE USED TO REPAIR BROKEN OR CRACKED MORTAR AND TO PATCH HOLES IN EXPOSED WALLS. ALL OLD, CRACKED MORTAR SHALL BE COMPLETELY REMOVED AND THE SUBSTRATE SURFACE SHALL BE CLEAN AND DRY PRIOR TO THE INSTALLING NEW, 1-INCH THICK MORTAR. MORTAR TO BE HB2 REPAIR MORTAR.

11. CONTRACTOR SHALL INSTALL NEW STEPS IF NO STEPS ARE PRESENT OR IF THE EXISTING STEPS ARE DAMAGED.



REHABILITATION OF EXISTING MANHOLE

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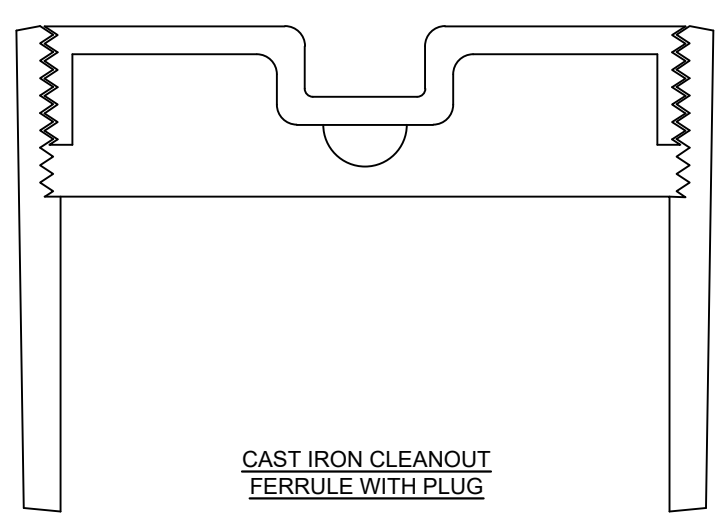
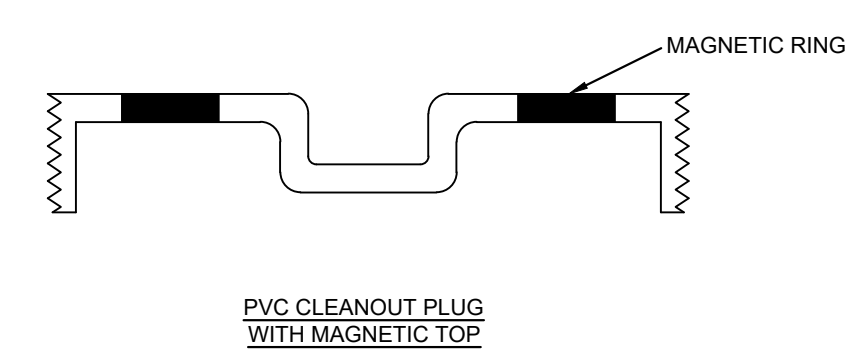
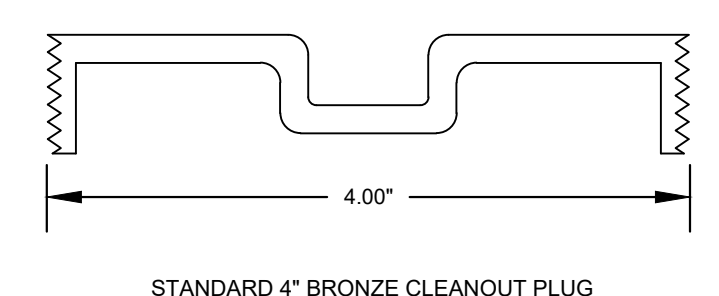


NOTE:

- SEE STANDARD SEWER LINE TRENCH DETAIL FOR PIPE BEDDING BEYOND COUPLING.
- WHERE EXISTING PIPE MATERIAL IS CAST IRON OR DUCTILE IRON, CONTRACTOR SHALL USE A RIGID DUCTILE IRON SEWER COUPLING.

STANDARD SEWER LINE COUPLING

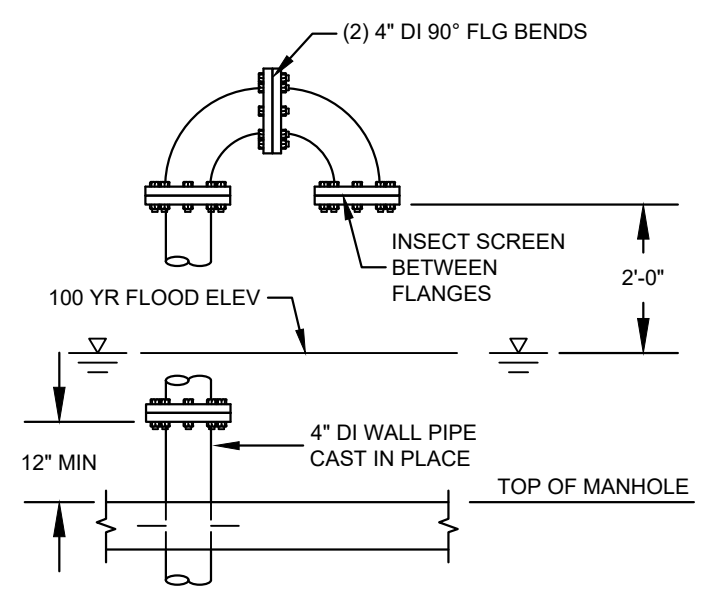
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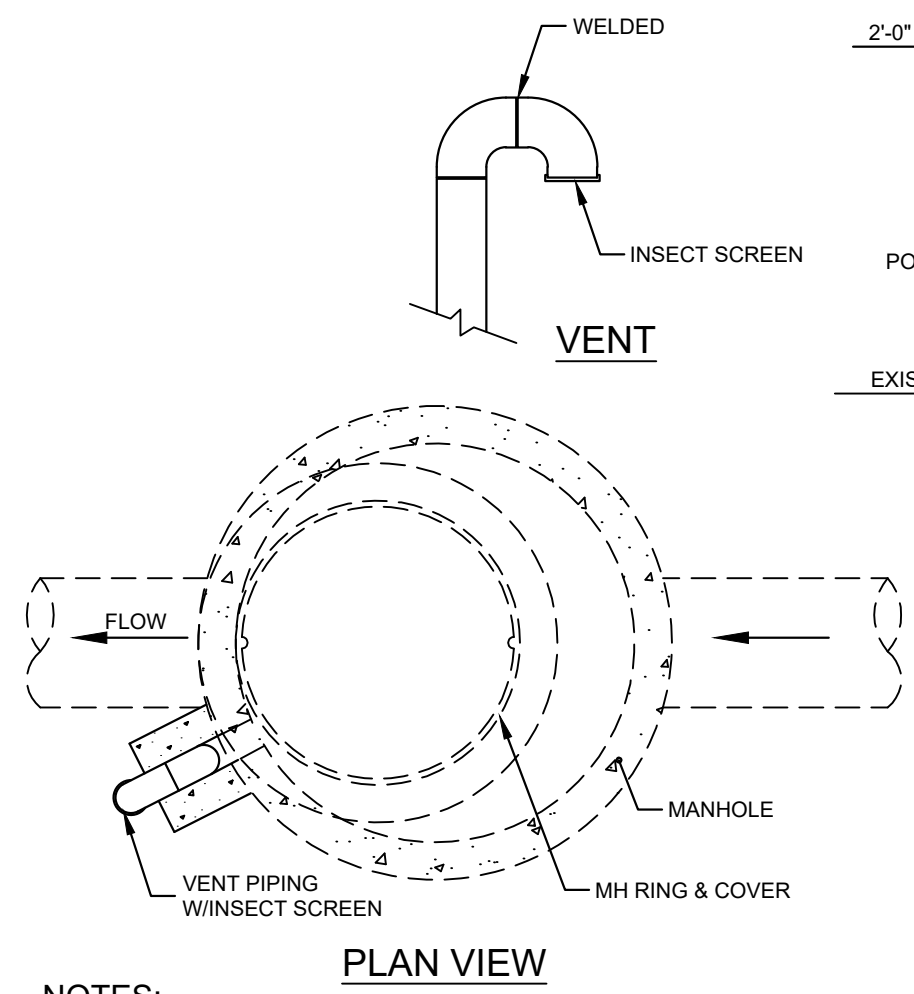
STYLES ACCEPTED:
INVERTED NUT
RAISED NUT



NOTES:

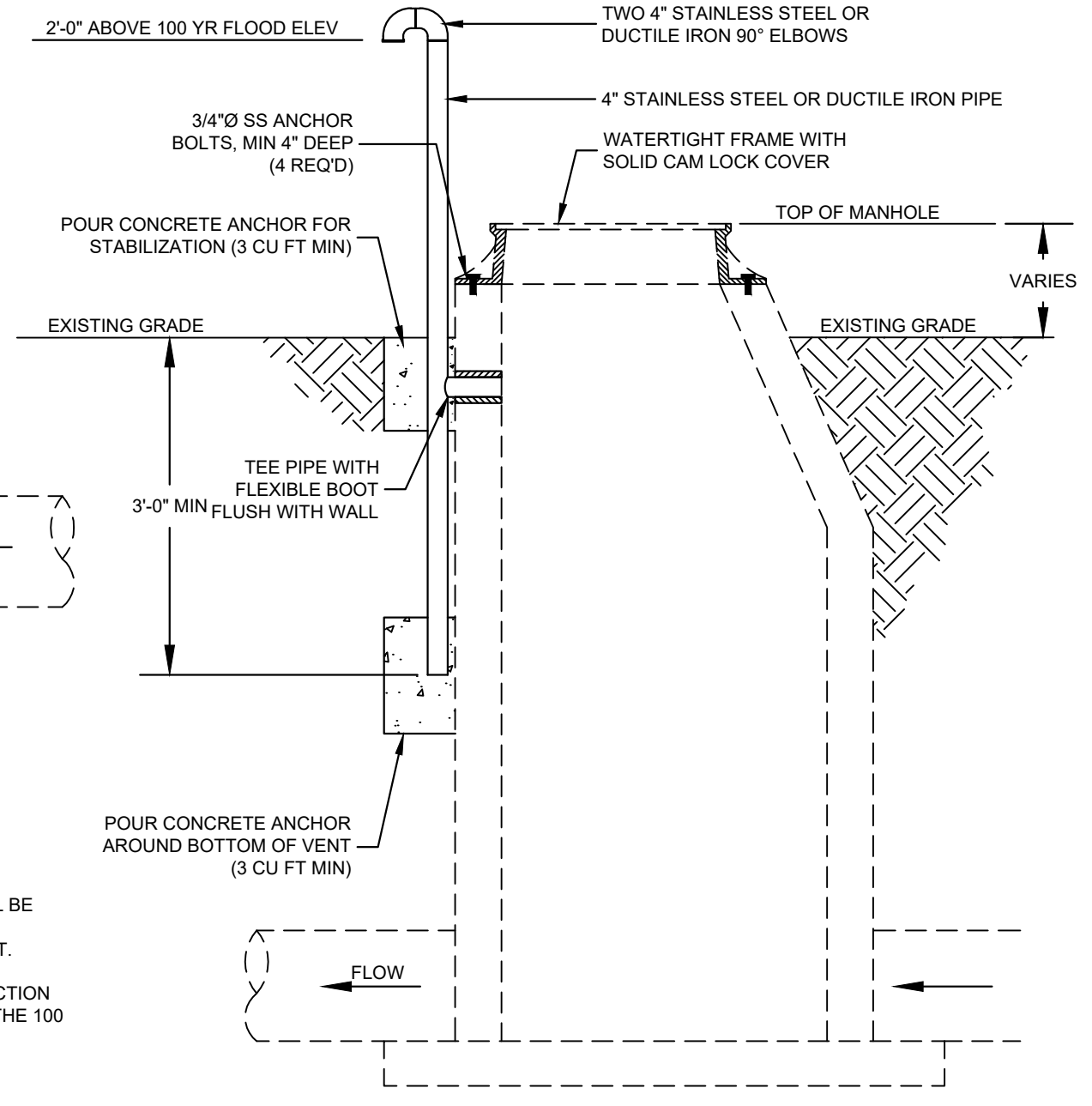
- WHERE SEALED MANHOLES ARE NOT LOCATED IN A 100 YR FLOODWAY OR FLOODPLAIN BUT ARE TO BE VENTED, VENT ELEVATION SHALL BE A MINIMUM OF 12-INCHES ABOVE RIM ELEVATION.
- PROVIDE VENTS ON MANHOLES AS INDICATED ON PLAN AND PROFILE. WHERE VENTS ARE NOT REQUIRED, FLAT TOP SHALL NOT BE CORED FOR VENT.

OPTIONAL VENT DUCTILE IRON FLANGED FITTINGS



NOTES:

- VENT PIPE OPENING IN PRECAST CONCRETE MANHOLE WALL SHALL BE CORED WITH A CONCRETE CORING MACHINE. FOR BRICK/MORTAR, PROVIDE NEAT OPENING AND FILL AROUND WITH NON-SHINK GROUT.
- LOCATION OF VENT PIPE SHALL BE AS DIRECTED BY THE CONSTRUCTION INSPECTOR WITH VENT TO BE ELEVATED AT LEAST 2 FEET ABOVE THE 100 YEAR FLOOD ELEVATION OR AS SHOWN ON PLANS.
- VENT PIPE SHALL BE STAINLESS STEEL OR DUCTILE IRON.
- FOR VENT HEIGHTS BETWEEN MIN. OF 12 IN. AND 6 FEET, CAST IN PLACE SLEEVE MAY BE USED.
- FOR VENT INSTALLATIONS GREATER THAN 6 FEET, TEE PIPE WITH SIDE CORE SHALL BE USED TO PROVIDE STRUCTURAL RIGIDITY FOR ELEVATED VENT STAKES. IN THESE CASES, FLAT TOP SLAB WITH VENT SLEEVE SHALL NOT BE PROVIDED. PROVIDE BOOTED, WATER-TIGHT SIDE PENETRATION FOR VENT CONNECTION.



ELEVATION VIEW

MANHOLE VENT INSTALLATION (NEW/EXISTING MANHOLE)

NOT TO SCALE

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NC LICENSE NO. F-0374

NORTH CAROLINA
PROFESSIONAL SEAL
ENGINEER
LIBERT M. HUCKLEY
054233
10/31/2025

REVISION RECORD	DESCRIPTION	DATE	BY
1	POINT REPAIR NOTE REVISED: VACUUM TESTING NOTE DELETED	10/20/25	DK

PROJECT NAME:
EVALUATION AND REHABILITATION OF WASTEWATER SYSTEM FOR BRUNSWICK COUNTY PUBLIC UTILITIES

DRAWING TITLE:
STANDARD DETAILS 7

PROJ. MGR.: AMH
DESIGN BY: TJK/KGD
DRAWN BY: TJK/KGD
PROJ. DATE: OCT 2025
DRAWING NUMBER:
D-7
WKD PROJ. NO.:
20220870.00.WL

FINAL DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION



**SOUTHPORT EVALUATION AND REHABILITATION OF
WASTEWATER SYSTEM**

BRUNSWICK COUNTY, NC

Thursday, October 23, 2025

SIGN-IN SHEET



Location: Public Utilities Operations Center, 250 Grey Water Rd, Supply, NC

Time: 10:00 AM

ATTENDEES	COMPANY	PHONE	E-MAIL ADDRESS
Ed Pepe, PE	WK Dickson/Ardurra	910-762-4200	epepe@ardurra.com
JJ Memahan	Complete Utilities	803 513 1837	jj @ complete-utilities.com
Jeff Price	TALOVING CO.	919-734-8400	jprice@taloving.com
Jimmy Whitley	Jymco	919-207-5659	jymco.construction@gmail.com
Sheri Hood	Samson Storm+Sewer	919-894-6398	sheri.samsoncpc@gmail.com
Carter Hubbard	Ardurra		
M. DILLAHAY	BCPU	910-523-4729	
Rob Miller	BCPU	910-721-8420	robert.miller@brunswickcountync.gov
Bobby Sweat	BCPU	910-253-1825	bobby.sweat@brunswickcountync.gov
Stephanie Weper	State Utility Contr	910-367-0034	Dustin@Sucontractors.com



AGENDA

Southport Evaluation and Rehabilitation of Wastewater System

10/23/2025

10:00 am – 11:00 am

Attendees: See attached sign-in sheet.

Please read: N/A

Please bring: N/A

Agenda

Bid Procedures

- Bidder questions and/or clarifications must be submitted in writing no later than October 29, 2025, at 5:00 p.m. ET.
- Questions or requests for clarification shall be directed to:
 - Monroe Huckaby, PE
 - W.K. Dickson & Co., LLC
 - Email: mhuckaby@ardurra.com
 - Telephone: (919) 256-5659
- Bids due by 2:00 pm on Friday, November 7th.
- MWBE business shall be considered per the contract documents.
- Funding through SRF and ARPA - Davis-Bacon and American Iron and Steel requirements apply.
- Forms to be included with Bid:
 - Form of Proposal
 - Socioeconomic Contracting Affidavit
 - Good Faith Efforts Form
 - Table A: Prime Contractor and List of Selected Subcontractors
 - Table B: Subcontract Solicitation List (if applicable)
 - Form of Bid Bond – 5% Bid bond
 - American Iron and Steel Certification required to be submitted with Bid



Project Scope

- New construction of approximately 9,000 linear feet of 8-inch sanitary sewer force main connecting Park Avenue Pump Station to the manifold force main connection on NC 211 in Southport.
- Rehabilitation of existing sewer infrastructure within the City of Southport, NC:
 - CIPP
 - Sewer Point Repairs
 - Cut in service lateral wyes by point repair
 - Manhole Rehab
 - Add manhole liner
 - Replace with polymer concrete manhole
 - Add Watertight manhole frame and cover
- Contractor to televise all sewer to be worked on before and after repair

Bids will be received as Single Prime. All bids shall be lump sum, with provisions for unit prices as indicated in the Form of Proposal.

Trees

Only designated trees to be removed or trimmed. Contractor shall review and notify Engineer if additional tree trimming is requested.

Maintain Operation

Operation of the existing wastewater system shall be maintained at all times. Contractor to provide bypass pumping as required.

Contract Period

- A. Substantial Completion: **500** consecutive calendar days
- B. Final Completion: **530** consecutive calendar days
- C. Liquidated Damages: **\$1,800.00** per day after Substantial Completion

Questions