

PWC

Fayetteville's HOME TOWN UTILITY

REQUEST FOR PROPOSALS

REPLACEMENT OF THE SANITARY SEWER MANHOLE AT CARGILL



April 2022

Fayetteville Public Works Commission
PWC Operations Center
955 Old Wilmington Road
Fayetteville, NC 28301

**FAYETTEVILLE PUBLIC WORKS COMMISSION
FAYETTEVILLE, NORTH CAROLINA**

REPLACEMENT OF THE SANITARY SEWER MANHOLE AT CARGILL

BIDDING AND CONTRACT REQUIREMENTS

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Notice to Proceed

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REQUEST FOR PROPOSAL

SANITARY SEWER MANHOLE REPLACEMENT AT CARGILL

GENERAL TERMS AND CONDITIONS

SCOPE OF WORK

Pursuant to North Carolina General Statutes (N.C.G.S) § 143-131, the Fayetteville Public Works Commission (“PWC”) is currently seeking qualified contractors to perform the following Work:

Installation of a gravity sewer main and manhole and all other requirements as indicated on the enclosed drawings and as described in the Contract Documents.

All Work shall be done in accordance with the terms and conditions outlined in the Contract Documents, PWC’s “Manual for the Design and Construction of Water and Wastewater System Extensions” (most recent edition), North Carolina Department of Transportation’s (NCDOT) “Standard Specifications for Roads and Structures” (most recent edition), and subject to final approval and acceptance by PWC.

A. Instructions to Bidders

1. Submittal Package

Prospective bidders should complete the enclosed bid proposal, sign, and date where indicated, and return the completed proposal and required supplemental documents to PWC. **All bidders shall submit with its bid all qualification information required by this Request for Proposals.** All proposal packages shall be sealed in an envelope and addressed to:

Fayetteville Public Works Commission
Attention: Nikole Bohannon, Procurement Advisor
955 Old Wilmington Road
Fayetteville, NC 28301

2. Bid Schedule

All proposals must be received no later than **5:00 p.m., Friday May 20, 2022.** Bids will be opened the next business day. Late bids will not be considered and will be returned to the bidder unopened.

An **OPTIONAL** pre-bid conference will be held in Skills Lab, PWC Administration Building, 955 Old Wilmington Road, Fayetteville, North Carolina, 28301 at **10:00 a.m. on Tuesday, April 19, 2022.** Questions will be fielded at the pre-bid conference and all prospective bidders are encouraged to attend the conference. Individual telephone inquiries are prohibited. The PWC assumes no responsibility to fully inform absentees of clarifications not issued by addendum.

This is an informal bid; therefore, there will be no formal bid opening. Bids will be examined promptly after opening and an award will be made at the earliest possible date. Bids must be held firm for acceptance by PWC for a period of ninety (90) days after the bid opening date.

The following table summarizes the dates and times regarding bids for this project.

Summary of Bid Schedule

Deadline for Bid Receipt	<u>5:00 p.m., Friday, May 20, 2022</u>
Pre-Bid Conference (Optional)	<u>10:00 a.m., Tuesday April 19, 2022</u>
Deadline for Questions from Bidders ¹	<u>5:00 p.m., Wednesday, May 4, 2022</u> All questions must be submitted in writing.
Deadline for Addenda issued by Project Engineer ²	<u>5:00 p.m., Thursday, May 12, 2022</u>
Date of Availability	Date when the contract is executed by both the successful bidder and PWC
Contract Time	45 Calendar Days
Liquidated Damages ³	\$ 500.00 per Calendar Day

¹ Questions regarding this bid shall be submitted in writing to the attention of Nikole Bohannon, Procurement Advisor, or via e-mail to nikole.bohannon@faypwc.com no later than the date and time stated above. Oral explanations and interpretations made prior to bid opening shall not be binding on PWC.

Bidders are expressly prohibited from contacting any PWC official or employee associated with this Request for Proposals, except as noted above. Violation of this prohibition is grounds for the immediate disqualification of the bidder.

² PWC will provide all bidders with the questions posed by prospective bidders and PWC's answers. If the questions result in revisions to the plans and/or this Request for Proposals, an addendum will be issued by the PWC Project Engineer no later than the date and time stated above.

³ For each calendar day in excess of the allotted contract time, the contractor shall pay to PWC the amount listed above as liquidated damages. Time extensions must be requested in writing for approval by the PWC Project Engineer.

B. Definitions

1. Contractor

The Contractor is the individual or entity with whom PWC has entered into the Agreement. The Contractor is also referred to herein as the “successful bidder.”

2. Fayetteville Public Works Commission (“PWC”)

The entity with whom Contractor has entered into the Agreement and for whom the Work is to be executed. The owner of this project is PWC, acting through its authorized representatives, primarily the Water Resources Engineering Department, located at 955 Old Wilmington Road, Fayetteville, NC 28301.

3. Project Engineer

The Project Engineer is the person assigned by PWC, to coordinate, manage, monitor, and administer the Work. The Project Engineer has the authority to approve any changes in scope of Work.

4. Project Coordinator

The Project Coordinator is the authorized representative of Project Engineer who may be assigned to the Site or any part thereof.

5. Project

The Project consists of the Work to be performed under the Contract Documents.

6. Work

The Work is the entire completed construction, or the various separately identifiable parts thereof, required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, equipment, materials, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

7. Non Compliance Notice (NCN)

A written notice given by the OWNER to CONTRACTOR indicting a violation in Contract Terms.

C. General Conditions

1. Award of Contract – PWC will prepare a Construction Agreement for the successful bidder in the monetary amount of the bid. Prior to beginning work, the successful bidder shall furnish the appropriate bonds and insurance certificates to PWC’s Procurement Department within ten (10) calendar days of receipt of the Notice of Award. PWC may, in its discretion, extend the ten (10) day period.
2. PWC will issue a written Notice to Proceed to the Contractor upon receipt of the Contractor’s bonds and insurance information.
3. PWC reserves the right to reject any and all bids, to waive any and all informalities, and to disregard all non-conforming, non-responsive, or conditional bids.
4. **In order to be considered for award of this bid, contractors and prospective bidders shall submit the required qualification information with its bid.** PWC will review all of the bids and qualification information to determine the lowest, responsive, responsible Bidder. PWC reserves the right not to

award the Contract to the lowest Bidder if the Bidder fails to provide the requested information, the Bidder is deemed non-responsible, or if the submitted information does not meet the satisfaction of PWC, or has been falsified. The information requested is intended to indicate the minimum requirements for work on this project. **The following items are considered to be the Contractor's Qualification Information and are required to be submitted with the Contractor's Bid:**

- A. A list of client references and contact information (minimum of three (3)).
- B. A list of projects (minimum of three (3) projects), similar in nature and completed within the last three (3) years.
- C. Proof of General Contractors Licensure.
- D. Copy of Certificate of Insurance.

Failure or refusal to furnish complete Contractor's Qualification Information with the Contractors Bid shall constitute a basis for disqualification of any Bidder. Should PWC determine that the apparent low bidder is not the lowest, responsive, responsible bidder by virtue of the Contractor's Qualification Information, the bid may be rejected and said apparent low bidder will be notified.

- 5. All applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract, and they are deemed to be included in the contract the same as though herein.
- 6. PWC reserves the right to request tests on any or all materials and workmanship by a certified testing firm. Initial tests shall be completed at the expense of PWC. Re-inspections and re-testing required due to failure of previous tests shall be at the Contractor's expense.
- 7. All prices submitted by a Bidder in its Bid shall be firm against any increase for the contract period.
- 8. PWC reserves the right to delete any single item or combination of items from the successful bidder's proposal.
- 9. All work required on the plans, specified herein or as directed by PWC in the field, to satisfactorily complete the above project is the Contractor's responsibility. The Contractor shall be responsible for performing any excavation and grading; furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work; and leaving the site in a neat and satisfactory condition.
- 10. Payment shall be monthly estimates approved by PWC on the work completed. The Contractor shall review all pay application quantities with PWC's Project Coordinator, prior to submitting an official application for payment. The monthly estimates shall be based on the work completed as of the last Friday of the month.
- 11. There will be no payment for stored materials.
- 12. The Contractor is charged with the responsibility of inspecting and examining the site prior to submitting its bid, as no additional allowances for extra compensation will be allowed as a result of the work being of a different nature than contemplated by the Contractor.
- 13. The Contractor shall commence work to be performed under the Agreement on a date specified in a written Notice to Proceed from PWC and shall fully complete all work hereunder within **45** consecutive calendar days from said date.
- 14. For each calendar day in excess of the above number of days, the Contractor shall pay to PWC the sum of five hundred dollars (\$500) as liquidated damages reasonably estimated in advance to cover any losses incurred by PWC by reason of failure of said Contractor to complete the work within the time specified. Time extensions must be requested in writing for PWC Project Engineer's approval, based on valid excessive delays caused by weather or other conditions not the fault of the Contractor.
- 15. The Contractor shall guarantee all workmanship and methods of construction for a period of one (1) year from the date of final acceptance.
- 16. Contractor shall indemnify, defend, and hold harmless PWC and its Commissioners, officers, employees, agents, and representatives and the City of Fayetteville and its elected officials, managers, employees, agents, and representatives and Designer (collectively "Indemnitees") from and against all claims,

actions, liabilities, damages, losses, costs, and expenses (including, without limitation, injury to or death of any persons and damage to property, economic and consequential damages and attorneys' fees) asserted by one or more third parties against one or more of the Indemnitees if the Fault of one or more Responsible Persons is a proximate cause of the loss, damage, or expense indemnified. Contractor's obligation to indemnify, defend, and hold harmless the Indemnitees shall survive the termination of this Agreement.

17. Statutory Requirements for Contracting with PWC:

- A. **LICENSING:** The Contractor shall be licensed as a North Carolina Public Utilities Contractor, Unlimited, pursuant to NCGS Chapter 87, Article 1
- B. **E-VERIFY:** Contractor hereby acknowledges that "E-Verify" is the federal E- Verify program operated by the US Department of Homeland Security and other federal agencies which is used to verify the work authorization of newly hired employees pursuant to federal law and in accordance with Article 2, Chapter 64 of the North Carolina General Statutes. Contractor further acknowledges that all employers, as defined by Article 2, Chapter 64 of the North Carolina General Statutes, must use E-Verify and after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with N.C.G.S. §64-26(a). Contractor hereby pledges, attests, and warrants through execution of this Agreement that Contractor complies with the requirements of Article 2, Chapter 64 of the North Carolina General Statutes and further pledges, attests, and warrants that all subcontractors currently employed by or subsequently hired by Contractor shall comply with all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement.
- C. **IRAN DIVESTMENT ACT:** As mandated by NCGS. 147-86.59(a), Contractor hereby certifies that he is not listed on the Final Divestment List created by the North Carolina State Treasurer pursuant to NCGS 147-86.58. Contractor further certifies that in accordance with NCGS 146-86.58(b) that it shall not utilize any subcontractor found on the State Treasurer's Final Divestment List. Contractor certifies that the signatory to this Purchase Order is authorized by the Contractor to make the foregoing statement

18. Termination – PWC reserves the right to immediately terminate the contract, if during the progress of the work or during the warranty period, the Contractor:

- A. Fails to prosecute any portion of the work properly and in accordance with the contract (to include failure to provide sufficient crews, equipment, or resources, failure to adhere to the schedule, etc.),
- B. Demonstrates disregard for the policies, procedures, and requirements of PWC,
- C. Demonstrates complete disregard of the authority of PWC and its designated representative, or
- D. Violates, any material provision or requirement of the contract.

Such termination shall be made in writing, upon providing seven (7) calendar days' notice to the Contractor and its surety.

Additionally, PWC may terminate the contract for its convenience. In such instance, the Contractor will be notified seven (7) calendar days prior, and will be paid for all work completed, plus other expenses as mutually agreed upon with PWC.

D. Insurance

1. The insurance required for this contract is as follows:

- A. **Commercial General Liability ISO #CG 00 01 10 93:** The Contractor shall take out and maintain during the life of this contract commercial general liability insurance with limits of \$1,000,000 per occurrence; \$2,000,000 aggregate other than products/completed operations; \$2,000,000 aggregate for products/completed.

- B. Automobile Liability ISO #CA 00 01 12 93: The Contractor shall take out and maintain during the life of this contract automobile liability insurance in an amount not less than \$1,000,000 combined single limit per accident for bodily injury and property damage from owned, non-owned, and hired automobiles.
- C. Workers' Compensation and Employers' Liability Insurance: The Contractor shall take out and maintain during the life of this contract workers' compensation insurance as required by the laws of the State of North Carolina and Employers' Liability with limits of \$100,000 each accident, \$500,000 policy limit and \$100,000 each employee for all employees employed on the project. In case any employee(s) engaged in work under this contract is or are not protected under the applicable workers' compensation statutes, the Contractor shall provide adequate coverage for the protection of employees not otherwise protected.
- D. Property Insurance: If contracted to construct a building, the Contractor shall purchase and maintain "Builder's Risk" insurance. This insurance shall include the interests of PWC, the Contractor, and Subcontractors and shall be written on a one hundred percent (100%) completed value basis (full value as of the date that all construction is finished and includes the Contractor's total cost-plus profit), and to remain in force until the project is completed and accepted by PWC.
- E. Regardless of the nature of the work to be performed, coverage must also be provided for the theft or damage of building materials and supplies, which are not permanently attached and stored on site for any period of time. This coverage shall be an "Installation Floater," and where no building construction is involved, the amount of the coverage shall equal the value of the materials stored on site.
- F. It is the responsibility of the Contractor to inform the policy provider of any and all change orders which increase the building's value. Any penalties or losses incurred due to the Contractor's failure to adequately insure the building during construction will be the Contractor's responsibility.
- G. PWC's and Contractor's Protective Liability I.S.O. #CG 00 09 10 93: The Contractor shall secure and maintain during the life of the contract, PWC's and Contractor's Protective Liability insurance policy for PWC, with minimum limits of \$1,000,000 per occurrence/\$2,000,000 aggregate.

2. Acceptability of Insurance

- A. All insurance policies shall be written by insurers licensed to do business in North Carolina. It is realized that certain business activities may not be readily insurable by admitted carriers. If insurance is written by non-admitted carriers whose names appear on the current listing of approved and non-admitted carriers prepared by the North Carolina Department of Insurance, such carriers will be favorably considered assuming they meet all other requirements. Non-admitted carriers should be so identified on the Certificate of Insurance form. PWC reserves the right to reject any and all certificates or policies issued by insurers with a Best's rating less than A.

3. Other Provisions:

- A. Any deductible or self-insured retention must be declared to and approved by PWC.
- B. The policies are to contain, or be endorsed to contain, the following provisions:
 - 1. Commercial General Liability Coverage
 - a. PWC, its officials, employees, and volunteers are to be covered as additional insured as respects: liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor; premises owned, leased, or used by the Contractor; or automobiles owned, leased, hired, or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to PWC, its officials, employees, or volunteers.
 - b. The Contractor's insurance coverage shall be primary insurance as respects PWC, its officials, employees, and volunteers. Any insurance or self-insurance maintained by PWC, its officials, employees, or volunteers shall be excess of Contractor's insurance and shall not contribute with it.

- c. Coverage shall state that Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
- C. All Coverages
 - 2. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) calendar days prior written notice by certified mail, return receipt requested, has been given to:

Fayetteville Public Works Commission
Attn: Trent Ensley, Procurement Manager
P.O. Box 1089
Fayetteville, NC 28302-1089

- 3. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to PWC, its officials, employees, and volunteers. In the event PWC is damaged by the failure of the Contractor to maintain such insurance and to so notify PWC, the Contractor shall bear all reasonable costs properly attributable thereto.
- D. Subcontractors. Contractor shall include all subcontractors as insurers under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.
- E. No Waiver of Immunity. Any insurance coverage required by the terms of this contract shall not be deemed a contract of insurance purchased by PWC nor a waiver of PWC's immunity pursuant to NCGS 160A-485.

E. Performance and Payment Bonds

- 1. The Contractor, at the time of the execution of the Contract shall be required to furnish a Performance Bond and Payment Bond in an amount equal to at least one hundred percent (100%) of the Contract price as security for the faithful performance of this Contract and as security for the payment of all persons performing labor and furnishing materials and equipment in connection with this Contract in accordance with N.C.G.S. Chapter 44A, Article 3.
- 2. The corporate surety furnishing the bonds shall be authorized to do business in the State of North Carolina and shall be acceptable to PWC. All contract payment bonds, and contract performance bonds shall be executed on "Performance Bond" and "Payment Bond" forms provided in this Proposal and be countersigned by a regularly authorized agent of the corporate surety who is a resident in North Carolina and who is licensed by the North Carolina Department of Insurance.
- 3. In all Performance and Payment Bonds, the provision that no suit, action, or proceeding by reason of any default whatsoever shall be brought on this Bond after a specified number of months shall be fixed at twelve (12) months. The face value of the Bond shall be one hundred percent (100%) of the Contract price for a period of twelve (12) months following the day when the last of the labor was performed, or equipment was furnished, or final settlement was made with the Contractor, whichever occurs last.
- 4. Whenever the Surety or Sureties on the bond so furnished shall be deemed by PWC to be insufficient or unsatisfactory, the Contractor, within ten (10) business days after notice to that effect shall furnish and deliver a new bond to PWC in the same penalty and on the same conditions with Surety satisfactory to PWC and this duty shall continue on the part of the Contractor, whenever and so often as PWC shall require a new bond with a satisfactory Surety or Sureties. If the Contractor shall fail to furnish such bond, within ten (10) business days after said notice is mailed to its address, PWC through its proper agent or agents, may stop all further work under said Contract and complete the unfinished work at the expense of the Contractor.

F. Project Specifications

1. The project specifications are hereby incorporated into the Contract Documents and are included in the appendix.

G. Project Drawings

1. The attached Contract Drawings are hereby incorporated into the Contract Documents and are included in the appendix. The Contractor shall always maintain a full set of Contract Drawings on site.

H. Special Conditions

These Special Conditions are intended to supplement and amplify the requirements of the Contract. Where any article or item of the Contract is modified or deleted by this section, the remaining unaltered provisions of that article, paragraph, subparagraph, or clause shall remain in effect.

1. Customer Service.

The Contractor is expected to make every effort to reduce the impact of its operation to PWC's operation and maintenance of the water and sewer system, and the affected residents within the project area. Full cooperation and coordination with PWC personnel and residents is expected. It is expected that the Contractor will promptly respond to any concerns voiced by residents and/or PWC personnel and make every effort to resolve them immediately. Providing exemplary customer service shall be incidental to this Contract, and no additional payment will be made for this service.

2. Resolving Discrepancies

The term "Contract Documents" shall have the meaning ascribed to it in the Construction Agreement. Except as may be otherwise specifically stated in these Contract Documents, the following order of precedence shall be adhered to for resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents:

- A. Any addendum issued prior to the opening of Bids
- B. The Construction Agreement (also referred to as the "Agreement" or "Contract")
- C. Special Conditions
- D. Measurement and Payment
- E. Approved Contract Drawings
- F. Fayetteville Public Works Commission Standard Details
- G. Fayetteville Public Works Commission Technical Specifications

3. Guarantee

All work completed under the Contract Documents shall be guaranteed by the Contractor for a period of one (1) year from the date of final acceptance. During that period, all serious defects discovered in the work, as determined by PWC, shall be removed and replaced in a satisfactory manner by the Contractor at no cost to PWC. PWC may conduct an independent inspection, at its sole expense, of the completed work prior to the completion of the one (1) year guarantee period.

Should PWC's inspection determine that the work is not in accordance with the Contract Documents; the Contractor shall make all necessary repairs at no expense to PWC. The Contractor will receive

written notification from PWC and be allowed the chance to review any available inspection pictures or other documentation. The Contractor shall respond to PWC with a plan of action within thirty (30) calendar days of receiving such notification. Failure to respond to PWC's notification may result in PWC withholding payments to the Contractor. Alternatively, PWC reserves the right to contract with another party to complete the warranty work, at the sole expense of the Contractor.

4. Cleanliness During Construction

The Contractor shall perform a daily clean-up of all dirt, debris, scrap materials, and other disposable items resulting from the Contractor's operations, whether on-site or off-site. The Contractor shall remove all construction equipment, barricades, tools, surplus materials, etc. no longer required at the site. No open accumulation of refuse, surplus, or scrap materials will be permitted. The Contractor shall legally dispose off-site all waste materials and other excess materials resulting from construction. No separate payment shall be made for maintaining a clean project site.

Failure of the Contractor to maintain a clean site will be basis for PWC to issue a written notice of non-compliance. If the Contractor does not take corrective measures within twenty-four (24) hours, PWC may authorize the clean-up to be performed by others, and the cost shall be deducted from monies due the Contractor.

5. Subcontractors

Second tier subcontractors shall not be allowed. Violation of this provision may be deemed a breach of the Contract.

6. Stored Materials

There will be no payment for stored materials on this project.

7. Disposal of Debris

The Contractor shall properly dispose of all debris resulting from its operations, in accordance with applicable federal, state, and local laws, regulations, and rules.

8. Limits of Construction

The Contractor shall confine its operations to the area shown on the approved Contract Documents. The Contractor may use additional area for staging, storage, or other operations, provided that written permission is obtained from property owners and all disturbed areas are restored, during the performance of the Work

9. Coordination with Cargill

This project involves replacing the sanitary sewer manhole that serves the Cargill Plant off River Road. The work will need to be coordinated with Cargill., to be completed during a period of low flows from their plant. Typically, the window of low flows is approximately 24 hours. The Contractor shall be prepared to coordinate their operations in order to take advantage of these low flows and not disrupt Cargill's operations. PWC is coordinating with Cargill to determine the next date of low flows. Typically, those occur about every three (3) months. It is noted that the flows are lower during these times but are not completely stopped. It is anticipated that some bypass pumping or pump and hauling may be necessary to complete this project.

Additionally, the project location is next to an entrance to the Cargill Plant. This entrance is typically used by tractor trailers making deliveries to the plant. The Contractor shall maintain access to this entrance at all times.

10. Equipment

The Contractor shall provide and utilize equipment perfectly adaptable for the type of construction required; all such equipment shall be of sufficient capacity to handle the Work in an expeditious and safe manner. PWC reserves the right to deny the use of inadequate equipment or of equipment not capable of performing the work in an acceptable manner.

With respect to the foregoing, it is the intent of PWC to require that the Contractor be equipped to perform the Work shown and specified in an expeditious manner and in accordance with the requirements set forth in the Contract Documents and best modern practices.

11. Materials

All materials utilized to complete the Work shall be in new condition. Materials must be stored in strict accordance with the manufacturer's directions. Materials shall be of the type and brand specified within the Contract Documents. **No alternative or substitute materials shall be considered prior to award of the Contract.**

The Contractor shall submit all requests to use materials other than specified to PWC for review. The Contractor shall be responsible for providing all required documentation necessary for PWC to review and decide if the substitute material meets the required specification.

The Contractor will be responsible for providing documented proof that the proposed substitution has a proven record of performance when used in the intended application as confirmed by actual field test(s) or by successful installations. PWC reserves the right to reject any such proposed changes or substitutions at its sole discretion and is under no obligation to justify its decision.

12. Erosion Control

The provisions of N.C.G.S. §139 et seq. shall be applicable to this Project. The Contractor shall adjust the measures to complement operations and prevent the transmittal of silt. All necessary erosion control measures shall remain serviceable until the site is restored and stabilized. Upon such time, the Contractor shall remove all temporary measures.

All fees, penalties, fines for non-compliance, and all civil actions resulting therefrom shall be the Contractor's responsibility and shall in no way involve PWC. The Contractor shall immediately notify PWC of any fine, penalty, or notice of non-compliance by the North Carolina Division of Environmental Quality (NCDEQ). The Contractor may be required to modify or supplement the measures at no additional cost to PWC.

In addition to installing and maintaining the appropriate erosion control devices, the Contractor shall maintain a neat and clean jobsite. The Contractor shall take necessary measures to minimize dust, ensure the streets are clean and free of debris, and other measures as required. The Contractor shall maintain the proper erosion control devices to ensure against erosion. The Contractor shall ensure that the catch basin and inlet protection devices are free of dirt and debris.

Permanent and temporary erosion control measures proposed by the Contractor for staging areas, haul roads, etc. shall be at the Contractor's expense and shall not constitute additional compensation.

13. Excavation

The Contractor shall be responsible for utilizing all measures necessary to comply with the applicable OSHA regulations and North Carolina law.

Before excavating, the Contractor shall contact North Carolina Utility Notification Center (Dial 811 or 1-800-632-4949) for the location of existing utilities within the area of the Project. Costs of utility repairs, temporary service, and other costs arising out of damage to or interruption of utilities, resulting from operations under this contract, shall be borne by Contractor at no additional cost to PWC.

Where the excavation is in pavement, the Contractor shall sawcut and remove asphalt or concrete pavement within the limits of allowable trench width. Where the excavation is within grass covered easement areas, the Contractor shall take care to minimize disturbance and/or removal of trees, shrubs, bushes, etc.

14. Confined Space

Prior to entering manholes or other areas that are confined spaces as defined by OSHA, the Contractor shall follow all requirements and procedures as outlined by OSHA's Confined Space Entry requirements. A confined space entry program shall be included as part of the Contractor's Safety Plan.

15. Use of PWC Water

PWC will allow the Contractor to use water from PWC's existing water system. The Contractor shall contact PWC's Environmental System Protection Department at 910-223-4699 to determine the required backflow prevention devices and to obtain a bulk water permit. The Contractor shall utilize proper backflow prevention devices when obtaining water from PWC's system or any other potable source. The Contractor shall be responsible for all permit fees. The Contractor shall provide documentation on the amount of water used and provide a monthly statement to PWC.

16. Warranty Against Patent/License Agreements

The Contractor shall warrant to PWC that the equipment used for any Work, where covered by patents or license agreements, is furnished in accordance with such agreements and that the prices included herein cover all applicable royalties and fees in accordance with such license agreements.

17. All Other Laws Apply

All applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over the Project shall apply to the contract throughout, and they are deemed to be included in the Agreement and Contract Documents the same as though set forth herein.

- A. Personnel contact information (to include emergency contact information)
- B. Proposed schedule
- C. Contractor's safety plan
- D. Labor and equipment rates
- E. Pre-Construction Video
- F. By-pass pumping

- G. PVC pipe and fittings
- H. Miscellaneous fittings (cleanout caps, etc.)
- I. Precast polymer concrete manholes (including boots)
- J. Manhole ring and covers

All information contained within the submittals shall be in accordance with the Contract Documents. Facsimile (fax) copies of the submittals or re-submittals will not be acceptable.

PWC shall review and approve, disapprove, or approve with comment the submittal within ten (10) business days of receipt. All notifications on the submittals will be provided to the Contractor in writing.

PWC's review of the submittals will cover only general conformity to the Contract Documents, external connections, and dimensions which affect the layout. PWC's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, device, or item shown. PWC's review shall not relieve the Contractor of the Contractor's sole responsibility for errors, omissions, or deviations in the drawings and data, nor of the Contractor's sole responsibility for compliance with the Contract Documents.

Any need for more than one (1) re-submission, or any other delay in obtaining PWC's review of submittals, will not entitle the Contractor to an extension of the contract duration, unless the delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of PWC to review any submittal within the submittal review period specified herein and to return the submittal to the Contractor.

18. Staging Areas

The Contractor may elect to secure staging areas for storing materials, equipment, etc. All costs including, but not limited to, rent, restoration, site maintenance, erosion control measures and permit fees, if any, shall be the responsibility of the Contractor.

The Contractor is responsible for complying with all applicable local, state, and federal regulations related to the operation of staging areas. All staging areas will be subject to inspection by PWC, or a designated agent thereof, for compliance with this section without prior notice. Any deficiencies will be documented by PWC, or its agent and written notice will be provided to the Contractor. The Contractor must rectify deficiencies within thirty (30) calendar days of receipt of the notice. Failure to do so will result in breach of contract.

If the Contractor's staging area is located within the City of Fayetteville city limits, the Contractor shall be required to obtain a Temporary Use Permit. This permit can be obtained from the City of Fayetteville Planning Department.

It is noted that it may take the City of Fayetteville thirty (30) calendar days to review and approve the temporary use permit. The Contractor shall prepare and submit the application in a timely manner, so as not to delay the project. No additional contract time will be granted for failure to apply for the Temporary Use Permit in a timely manner.

Proper measures, to include total secondary containment, shall be used for fuel storage and to prevent spillage. The Contractor shall not stockpile materials or place fill dirt on any property without approval from the property owner. Should the Contractor's stockpiles create drainage problems, the Contractor shall construct drainage improvements at its own expense as directed by the Project Engineer and/or Project Coordinator or relocate the stockpile(s). The costs for such Work shall be considered incidental to the Project and no additional payment will be made.

19. Pre-Construction Video.

The Contractor shall complete a pre-construction video inspection of the project area, to document pre-existing conditions. The video shall be in a standard digital video file format (i.e. mp4, mpg, or avi) and supplied on standard portable digital media (i.e. USB Flash Drive, USB Hard Disk Drive, or DVD) as approved by PWC. The intent of this video is to document the existing project conditions, including, but not limited to: the condition of driveways, curb and gutter, pavement, mailboxes, retaining walls, landscaping, and resident installed improvements. The Contractor shall also include any easement areas, especially those passing through yards, driveways, etc. The video must identify the house number and the street name both in the audio track and visually. The Contractor may also include any pre-existing conditions they want brought to the attention of the Project Engineer by including notes and time position on the index sheet. The Contractor can also include still pictures of the areas for additional documentation. The video and any other accompanying data shall be made available to PWC upon request. The pre-construction video will be utilized by PWC in the resolution of complaints. Therefore, it is in the Contractor's best interest to ensure that the pre-construction video is comprehensive and covers all areas to be impacted by the Work.

20. Construction Staking.

PWC shall provide all construction staking. A minimum of forty-eight (48) hours' notice is required. The Contractor shall contact the Technical Resources Supervisor, Mr. Rodney Maness, PLS, at (910) 223-4739 to schedule the construction staking. Cut sheets will be provided. It is expected that the Contractor will have a copy of the cut sheets on the job site, and available for inspection by PWC staff.

21. Site Restoration

After construction is completed, the Contractor shall be responsible for promptly restoring the site to as good as, or better than, existing conditions. All exposed areas are to be replaced with sod to insure against erosion, in accordance with the Soil Erosion and Sedimentation Control requirements.

For those areas outside the project limits, the Contractor shall be responsible for installing sod in all disturbed areas, unless otherwise noted on the plans, and for the full replacement of any driveways disturbed as part of its operations

22. Weigh/Quantity Tickets

Weigh/quantity tickets shall be required for those Contract quantities that are not measured in place, including, but not limited to, select material and undercut excavation. Work of this nature requires the Project Engineer or Project Coordinator's approval prior to beginning. PWC reserves the right not to pay for unauthorized Work.

All quantity tickets for items not measurable in place shall be submitted to the Project Coordinator. Each ticket shall indicate the date, Contractor, job location, name of project, quantity of material, truck number and signature of the Contractor. The Contractor shall furnish the tickets to the Project Coordinator by the end of the next working day. No tickets shall be accepted after that time unless otherwise authorized by Project Engineer.

When a material is to be paid for on a per ton basis, the weighing devices used to calculate quantities shall be certified by the N.C. Department of Agriculture. All scales shall be operated by a public weigh master licensed in accordance with the North Carolina General Statutes. A certified weigh certificate shall be issued for each load and contain the following information:

1. Project
2. Date
3. Time issued
4. Type of material
5. Gross weight (tons)
6. Tare weight
7. Net weight of material
8. Quarry or plant location
9. Truck number
10. Contractor's name
11. Public Weigh Master's stamp or number
12. Public Weigh Master's signature or initials in in

The Project Engineer and/or the Project Coordinator may direct the Contractor to re-weigh the contents of any truck load that is delivered to the project on approved platform scales at no additional cost to PWC.

When material is to be paid for on per cubic yard basis (i.e., select backfill), the payment shall be based on seventy-five percent (75%) of the volume indicated on the submitted truck tickets.

23. Final Inspection/Acceptance of Work

When the PWC Project Coordinator deems the project completed and ready for final inspection, the PWC Project Coordinator shall notify the PWC Project Engineer. During the final inspection any items documented shall be compiled in a final punch list and provided to the Contractor within five (5) business days. The Contractor shall be required to complete each item in the final inspection punch list within thirty (30) calendar days of receipt. Failure to complete the punch list in that time may result in liquidated damages being assessed as set forth in the Contract Documents. The project will not be considered complete until all punch list items are completed and accepted, unless otherwise determined by the PWC Project Engineer. All punch list items shall be completed prior to release of final payment. Once the deficiencies have been addressed to PWC's satisfaction, a final acceptance letter will be issued to the Contractor.

Prior to the final inspection, the Contractor shall complete the following:

1. Verify all valves are open.
2. Verify that all manholes with camlock ring and covers are locked.
3. Place green paint mark at the curb, indicating the location of the sewer lateral. The paint shall be heavily applied, so that the paint will last.
4. Place a PWC issued marker at all valves and manholes outside of pavement as directed by the PWC Project Coordinator.
5. Complete all restoration.
6. Complete all required testing

No separate payment shall be made for this Work.

24. Final Completion Documentation

Prior to receiving final payment, the Contractor shall complete and/or provide the following:

1. Complete all punch list items to the satisfaction of the Project Engineer.
2. Satisfactorily resolve all customer complaints and obtain the required releases.

3. Provide all labor and manufacture warranties required.

25. Record Drawings.

Upon completion of the Work, the Contractor shall provide one (1) complete set of drawings recording all changes to the Work to indicate actual installation. Changes shall be noted in legible red letters. These changes shall include, but are not limited to the following:

1. Changes in pipe material
2. Size, depth, and installed elevation of mains
3. Location of manholes, cleanouts, valves, laterals, blow-offs, and other structures or appurtenance.

Completion of the Contractor's record drawings is a specific contract requirement and final payment will not be made until these drawings have been submitted to the Project Engineer in an acceptable form.

26. Review of Contractor Pay Request

Prior to the Contractor submitting an application for payment, the Contractor and PWC shall review and agree on all items and quantities that the Contractor is requesting payment for. Each pay request shall contain a certificate documenting any sales tax paid by the Contractor for that billing period. A certified form is required even if no sales tax was paid for that pay request period.

Final payment and release of retainage will not be made until:

1. All contract requirements have been satisfactorily met,
2. PWC has completed a final inspection of the Work,
3. All deficiencies noted in the final inspection have been satisfactorily addressed,
4. All necessary site restoration has been completed, and
5. All required documentation (reports, release of liens, property owner release, etc.) has been submitted.

The Contractor is strongly urged to submit draft pay applications to PWC prior to submittal of the official pay application. PWC will review and provide any comments on the draft pay application within five (5) business days. Draft pay applications can be either emailed or faxed.

It is expected that the pay application will have a cover sheet similar to AIA Form G702 (or approved equal) that summarizes the contract value, any change orders, and Work completed to date. The Contractor shall furnish two (2) copies (one original and one copy) of the pay request.

27. Working Times.

The Contractor shall limit its operations to Monday through Friday, during normal business hours. Regular working hours shall not exceed 40 hours per week, 8 hours per day (between 7:00 a.m. and 5:00 p.m.), Monday through Friday. No work is permitted on legal holidays (to include weekends). No work, unless otherwise required due to an emergency and authorized by PWC, shall be performed on weekends or after hours without prior written approval from PWC. Requests to work other than regular working hours must be submitted in writing to PWC a minimum of two (2) business days in advance in order to arrange for appropriate personnel to be at the site of the work. Requests shall only be

approved if PWC determines, in its discretion, that the work is necessary in order to meet the contract completion date. The written request shall include a proposed schedule for the work to be completed.

During the course of construction, it may be necessary to complete portions of the work outside of the normal working hours, to accommodate the utility owner's operations, traffic, and/or public convenience. The Contractor, PWC, and the utility owner will determine an acceptable schedule required for work during such hours. The costs for such work shall be considered incidental to the Project and no additional payment will be made.

Legal holidays observed by PWC include New Year's Day, Martin Luther King Jr. Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving (2 days), and Christmas (2 days).

The Contractor shall plan its activities in order to maintain compliance with the requirements set forth in this section. Failure of the Contractor to properly plan and complete its activities within the times indicated, shall result in PWC issuing a notice of non-compliance.

Inspector overtime shall be charged if the Contractor works beyond regular working hours, to include weekends. The overtime will be charged at a rate of \$100.00 per hour. Inspector overtime may be waived for circumstances beyond the Contractor's control, as determined by the Project Engineer or Project Coordinator.

28. Limits of Construction

The Contractor shall confine its operations to the existing permanent easement (typically 20 feet, centered on the sewer main) or the existing street rights-of-way.

The Contractor shall coordinate with the Fayetteville Public Works Commission to confirm the size and location of the existing permanent easement(s).

The Contractor may use additional area for staging, storage, or other operations, provided that written permission is obtained from the property owner and all disturbed areas are restored.

29. Agreements with Property Owners

Any and all agreements between the Contractor and individual property owners for work, services, rent of staging areas, etc. located outside of any easements or public rights-of way shall not obligate PWC in any manner. Prior to performing any work on private property which could create a reasonable perception that the Contractor is acting on behalf of PWC, the Contractor shall furnish to PWC a signed and witnessed statement executed by the property owner acknowledging that PWC is not liable for any agreements between the property owner and the Contractor. Additionally, the Contractor shall have the responsibility to secure any and all agreements with property owners for any actions taken by its Subcontractors.

Prior to release of final payment, the Contractor shall obtain written releases from the property owners for satisfaction, completion, and restoration. Copies of those written releases shall be submitted to PWC with the final pay application.

The Contractor bears complete responsibility for any damage to private properties outside of PWC easements and/or rights-of-way.

30. Emergency Response

The Contractor shall maintain a construction crew capable of performing emergency maintenance work twenty-four (24) hours a day, seven (7) days a week, including all holidays. As a minimum, phone numbers shall be furnished for at least three (3) individuals in responsible charge (capable of making company binding decisions) to be available twenty-four (24) hours a day, seven (7) days a week, including holidays. The emergency phone numbers, and responsible individuals' names shall be furnished to PWC at the pre-construction conference. The Contractor's designated emergency personnel shall be expected to respond and perform emergency maintenance work immediately, in less than two (2) hours, or the work will be performed by others and all associated costs shall be deducted from the Contractor's payment.

The Contractor shall notify PWC Dispatcher (910-678-7400 or 910-223-4494) of the problem, the anticipated response time, and the estimated time required to complete the repair work. If the Contractor does not notify the Dispatcher when the work will be completed, a PWC crew will make the necessary repairs or alternate measures will be taken at the Contractor's expense.

31. Submittals

The Contractor shall provide submittal information as outlined below, and in accordance with these Contract Documents. The Contractor shall not perform any portion of the work requiring submittal and review until the respective submittal has been approved by PWC. Work performed prior to review and acceptance shall be at the Contractor's risk.

The Contractor shall submit to PWC one (1) electronic copy (PDF format) of all required submittal data for review and approval. The Contractor shall furnish, prior to use of the materials, satisfactory written certification of its compliance with the manufacturer's standards for all materials, conformance with the methods of the manufacturer, and accordance with all standards specified and referenced within these specifications. If requested by PWC, the manufacturer of materials, equipment, or product shall submit evidence of having consistently produced materials of satisfactory quality and performance for a period of at least two (2) years.

After the contract has been awarded the Contractor shall promptly provide submittals to PWC for the following:

1. Personnel contact information (to include emergency contact information)
2. Proposed schedule
3. Contractor's safety plan
4. Labor and equipment rates
5. Pre-Construction Video
6. By-pass pumping plan
7. PVC pipe and fittings
8. Miscellaneous fittings (cleanout caps, etc.)
9. Precast polymer concrete manholes (including boots)
10. Manhole ring and covers

PWC shall review and approve, disapprove, or approve with comment the submittals within ten (10) business days of receipt. All notifications on the submittals will be provided to the Contractor in writing. PWC shall return one (1) marked electronic copy of the submittals to the Contractor.

PWC's review of the submittals will cover only general conformity to the Contract Documents, external connections, and dimensions which affect the layout. PWC's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, device, or item shown. PWC's review shall not relieve the Contractor of the Contractor's sole responsibility for errors, omissions, or deviations in the drawings and data, nor of the Contractor's sole responsibility for compliance with the Contract Documents.

When the submittal is returned marked "Not Approved" or "Revised and Resubmit", the corrections shall be made as noted thereon and as instructed by PWC and one (1) electronic corrected copy shall be re-submitted.

When the submittal is returned marked "Approved" or "Approved as Noted", no additional copies need to be furnished, unless otherwise specifically requested by PWC.

The Contractor shall accept full responsibility for the completeness of each re-submittal. The Contractor shall verify that all corrected data and additional information previously requested by PWC are provided on the re-submittal.

When corrected copies are re-submitted, the Contractor shall, in writing, direct specific attention to all revisions and shall list separately any revisions made other than those called for by PWC on previous submissions.

Requirements specified for initial submittals shall also apply to re-submittals. Re-submittals shall be made within 30 calendar days of the date of the letter returning the material to be modified or corrected, unless within 14 calendar days the Contractor submits an acceptable request for an extension of the stipulated time period, listing the reasons the re-submittal cannot be completed within that time.

Any need for more than one (1) re-submission, or any other delay in obtaining PWC's review of submittals, will not entitle the Contractor to an extension of the contract duration, unless the delay of the work is directly caused by a change in the work authorized by a Change Order or by failure of PWC to review any submittal within the submittal review period specified herein and to return the submittal to the Contractor.

32. Warranty Against License Agreements

The Contractor shall warrant to PWC that the equipment used on the Contract, where covered by patents or license agreements, is furnished in accordance with such agreements and that the prices included herein cover all applicable royalties and fees in accordance with such license agreements.

33. COVID-19

As North Carolina and the nation continue to deal with the COVID-19 pandemic, we must all take necessary steps to ensure the health and safety of employees, coworkers, family, friends, associates and people that we come in contact with on a daily basis. At PWC we implemented measures including requiring our employees to conduct temperature and wellness checks, wear a face covering or mask, whenever possible, maintain proper social distancing (minimum of 6 feet) and take other actions such as washing their hands, using approved sanitizer and wiping down surfaces, especially commonly shared equipment or tools. This applies to employees working in our facilities, working in public or at field sites. For firms who are under contract with PWC or working under purchase orders, those firms are expected to comply with all OSHA/EPA guidelines, CDC recommendations including

any applicable North Carolina Executive Orders regarding the performance of work under COVID 19 conditions. Examples of such guidance can be found at the following:

OSHA COVID-19 Overview

<https://www.osha.gov/SLTC/covid-19/>

OSHA COVID-19 – Control and Prevention / Construction Work

[https://www.osha.gov/SLTC/covid-19/construction.html#:~:text=Keep%20in%2Dperson%20meetings%20\(including,Fill%20hand%20sanitizer%20dispensers%20regularly.](https://www.osha.gov/SLTC/covid-19/construction.html#:~:text=Keep%20in%2Dperson%20meetings%20(including,Fill%20hand%20sanitizer%20dispensers%20regularly.)

<https://www.osha.gov/Publications/OSHA4000.pdf>

North Carolina COVID-19 Executive Orders

<https://www.nc.gov/covid-19/covid-19-executive-orders>

Center for Disease Control

<https://www.cdc.gov/coronavirus/2019-ncov/index.html>

Implementing Safety Practices for Critical Infrastructure Workers

<https://www.cdc.gov/coronavirus/2019-ncov/community/critical-workers/implementing-safety-practices.html>

Essential Staff- Do's & Don'ts

https://www.cdc.gov/coronavirus/2019-ncov/downloads/Essential-Critical-Workers_Dos-and-Donts.pdf

NC Licensing Board for General Contractors

<https://www.nclbgc.org/2020/07/02/board-buzz-summer/>

NC Association of General Contractors

<https://www.cagc.org/CAGC/SafetyHR/CAGC/Safety/SafelyHomeInitiative.aspx?hkey=e3439388-0c36-4755-91bd-4c8fc6d22a41>

NC Department of Health and Human Services

<https://covid19.ncdhhs.gov/>

Cumberland County Health Department

<https://www.co.cumberland.nc.us/departments/public-health-group/public-health>

Department of Homeland Security

<https://www.ready.gov/pandemic>

Cape Fear Valley- What to do if you have COVID symptoms

https://www.youtube.com/watch?time_continue=1&v=tD0D7Apa_vw&feature=emb_logo

FAYPWC COVID Response

<https://www.faypwc.com/covid-19-update/>

Small Business Administration

<https://www.sba.gov/page/coronavirus-covid-19-small-business-guidance-loan-resources>

As an additional step to ensure the health and safety of contractor employees and PWC employees, should a contractor's employee test positive for COVID 19 the contractor must immediately inform the PWC project manager/supervisor or the Contractor's primary point of contact at PWC and the employee should be performing work at PWC facilities or field sites until medically cleared. This is necessary so PWC can inform our employees, conduct or own method of contact tracing for our employees and take any measures necessary such as quarantining PWC employees who may have been in contact with the individual who tested positive.

These actions are necessary to ensure the health and safety of all and to ensure that contract performance can be achieved under the conditions of this pandemic.

Contractor must provide a plan with its proposal that describes its plan for working under COVID-19 conditions. The plan should address the Contractor's approach to protect its employees, PWC employees, along with any other Contractor's working on PWC's locations. This may include the Contractor's approach towards employee use of PPE, such as face masks, sanitizing commonly shared tools or equipment, practicing social distancing as work conditions permit, and working within close proximity of others. The plan may also address any other actions that the Contractor will be taking, such as conducting daily temperature checks, conducting symptom checks and trackers, and any other actions the Contractor deems appropriate to protect the health and safety of its employees, PWC employees, and any other Contractors working on PWC's locations.

I. Spill Response

1. The Contractor shall adhere to this Section whether or not the Work directly involves PWC's sewer system. The Contractor shall not allow discharge of any sewage, solids, or debris on the ground, streets, storm water system, ditches, or streams. Any sewage spills shall be immediately reported to the PWC Water Resources Construction Department, (910) 223-4716. After normal business hours, the Contractor shall contact the PWC Dispatch Center, (910) 678-7400.
2. In the event that raw sewage is spilled, discharged, leaked, or otherwise deposited in the open environment due to the Contractor undertaking any portion of the Work, the Contractor is responsible for any cleanup of solids and disinfection of the affected area. This Work will be performed at the Contractor's expense with no additional cost to PWC. The Contractor is also responsible for complying with any and all regulatory requirements in regard to the spill with no additional cost to PWC. The Contractor shall cooperate fully with PWC and the applicable State agencies in responding to and cleaning up the spill. Any Work completed by PWC in responding to a spill caused by the Contractor's operations shall be billed to the Contractor and the Contractor shall bear such costs and expenses.

J. Measurement and Payment

This section defines the methods of measurement and payment for each of the prices listed in the Proposal, which are required to complete the work. The bid price shall be full compensation for the work required

under each bid item, which shall include all incidental costs relative thereto. Certain items of work are specified and/or shown as a detail in the Contract Documents. Bid prices shall include all items of work required to furnish and/or install each in accordance with the Project requirements, whether specifically stated or itemized in the Measurement and Payment description.

Each unit price for the specific line item shall include coordination with PWC personnel, all materials, labor, and incidentals associated with the specific item of work, and proper disposal of any waste items.

1. Mobilization

A mobilization pay item is included for all initial costs incurred prior to beginning Work on this Contract, including permits, licenses, fees, insurance, bonds, etc., as well as to mobilize personnel and equipment. Payment will be made on a lump sum basis and one time only for the duration of a contract period.

2. Bypass Pumping

The lump sum price for this item shall include all labor, materials, accessories, equipment, and tools for performing all operations required to bypass pump sewage around a manhole or sewer section in which Work is to be performed. Payment shall be made at the applicable lump sum price as listed in the Bid Form.

Payment shall be for all activities related to bypass pumping, including, but not limited to: pump mobilization and demobilization, manhole plugs, bypass lines, coordination with residents, cleaning the bypass lines, removal and installation of the bypass lines, continuous monitoring of the bypass system, appropriate air release valves, any necessary restoration, fuel, lubricants, labor, materials, equipment, and all other incidentals necessary to ensure that the pumping operation is accomplished in accordance with the Contract Documents.

The cost for bypassing and/or maintaining sewer flows to the individual customer shall be included in this unit price.

3. Install Polymer Concrete Manhole

This item shall be measured by actual count of new manholes installed, complete, and in place. Payment shall be made at the applicable unit price for size and depth as listed in the Bid Form. Depth shall be based on the distance between the rim and lowest invert shown on the plans.

The unit price for this item shall include all necessary costs to furnish and install new manholes as indicated on the plans and in accordance with PWC Standards. The unit price shall include all costs for excavation, backfill, removal and disposal of unsuitable material off-site, linings, installation of flexible boot connectors, inverts, pipe slides, dewatering, compaction, necessary erosion control measures, cutting and removal of pavement, proper disposal of waste, stone bedding, installation of the manhole in accordance with PWC standards, installation of the specified frame and cover, concrete collar, and all labor, materials, equipment, and incidentals necessary to complete the Work.

Additionally, the unit price for this item shall include costs associated with all materials needed for the polymer mortar required for grouting and patching of polymer manholes.

Unless there are changes in locations as directed by the Project Engineer or the Contractor can demonstrate that the depth is significantly greater than shown, the drawings shall be used to establish the depths for this pay item.

4. Install C-900 PVC Sewer Main

This item shall be measured per linear foot of sewer main installed and accepted. Installation of the sewer main shall be accomplished in accordance with PWC Standard Specifications 02730 Sanitary Sewer Systems. Payment under this item shall include all costs necessary to install each size pipe and material listed in the proposal in accordance with PWC standards. Work shall include all costs for excavation, coring existing manholes, backfill, compaction, pavement saw cutting, removal and proper disposal of asphalt, removal and proper disposal of the existing manhole and piping, installation of the pipe at the specified line and grade, necessary erosion control measures, stone bedding, and all labor, materials, tools, equipment, and incidentals necessary to complete the Work. The Contractor shall be responsible for completing the installation, all required testing, proper alignment and grade of the installed main, and all other items related to proper installation. No payment for installation of the sewer main shall be made until all required tests are satisfactorily completed.

5. Manhole Testing

This item shall be measured by number of manholes complete, in place, and tested. Payment shall be made at the applicable unit price as listed in the Bid Form.

The unit price for this item shall include all costs necessary to perform the required testing on manholes. The unit price shall include all costs for furnishing test equipment, coordination with the PWC Project Coordinator, and all labor, materials, equipment, and incidentals necessary to complete the testing in accordance with PWC standards. Payment under this line item shall not be made until all performed tests are successful. No extra payment will be made for laterals connecting directly to manholes.

The Contractor shall be responsible for furnishing all necessary equipment to complete the testing, coordination with the Project Coordinator, and removal of all unnecessary taps and fittings upon completion of the Work.

6. Undercut Excavation

This item shall be measured by cubic yards of unsuitable material excavated below the bedding limit line. Payment under this item will not be made without prior authorization of the Project Coordinator.

- Measurement for undercut shall be based on the depth authorized by the Project Coordinator, which shall be a minimum of four (4) inches.
- Measurement for undercut below pipes shall be based on the internal diameter of the pipe plus two (2) feet, multiplied by the undercut depth required for proper support of the pipeline.
- Measurement for undercut below structures shall be based on the external diameter/dimension of the structure plus two (2) feet, multiplied by the authorized undercut depth required for proper support of the structure.

Payment shall be made at the applicable unit price as listed in the Proposal form.

The unit price shall include the costs for all labor, tools, materials, and equipment including, but not limited to, the removal and disposal of unsuitable soil, furnishing and installing approved bedding material and all other incidentals necessary to complete the Work. No payment for undercut will be

made for over-excavation by error or where proper dewatering methods are not in place for trench and/or excavation stabilization.

7. Select Material

This item shall be measured by cubic yard, and shall be seventy-five percent (75%) of the volume indicated on the submitted truck tickets. PWC reserves the right to verify the actual amount of material in place. Payment shall be made at the applicable unit price as listed in the Bid Form.

The unit price for this item shall include all costs necessary to furnish and install select material necessary to provide proper suitable backfill material compacted and in place as measured. The unit price shall include all costs to acquire, place, and compact select backfill material, removal and proper disposal of unusable material, and all labor, materials, equipment, and incidentals necessary to complete the Work.

Borrow excavation material shall be supplied by the Contractor from approved borrow areas located off-site.

Disposal of unsuitable and/or suitable excavated material will not be paid for as a separate bid item.

8. Sod

This item shall be measured by square yards of sod complete and in place. Payment shall be made at the applicable unit price as listed in the Bid Form.

The unit price under this item shall include all costs necessary to prepare the soil, anchoring, placing sod, providing topsoil as necessary, grading, raking, pest and disease control, soil amendments, fertilizing, maintaining, removal, and replacement of dying sod, watering, reseeding if required, tack, and all labor, materials, tools, equipment, and incidentals necessary to complete the Work. No payment will be made for placing sod in areas outside of easements or rights-of-way disturbed or otherwise damaged by the Contractor

Once construction is completed, the Contractor shall be responsible for fine grading all exposed areas. All exposed areas of the project are to be placed with sod to insure against erosion, in accordance with the Soil Erosion and Sedimentation Control requirements.

All sod shall be installed in accordance with PWC Standard Specification 02931 – Sod.

9. Contingency

This line item shall be used only upon issuance of a written work order by PWC for Work not included in other items. The amount paid will be negotiated as lump sum or unit price per each item of additional Work. Any unused portion of the allowance remaining at the completion of the contract shall revert to PWC as a credit. PWC reserves the right to delete the allowance from the contract prior to award.

BID PROPOSAL FORM

Description	Quantity	Unit	Unit Price	Total
1. Mobilization	1	LS		
3. Bypass Pumping	1	LS		
4. Install Polymer Concrete Manhole: 5' Diam, 10'- 12' deep	1	EA		
5. Install C-900 PVC Sewer Main: 8-inch C900 10'-12' deep	20	LF		
6. Manhole Testing	1	EA		
8. Undercut Excavation	15	CY		
9. Select Material	90	CY		
10. Sod	200	SY		
11. Contingency	1	LS	\$	\$

Total Bid Price: _____

Name of CONTRACTOR _____

By: _____

Title: _____

Address: _____

Email Address: _____

License No: _____

Witness: _____

Respectfully submitted this _____ day of _____, 2022

**FAYETTEVILLE PUBLIC WORKS COMMISSION
FAYETTEVILLE, NORTH CAROLINA**

NOTICE OF AWARD

TO _____

PROJECT DESCRIPTION: SANITARY SEWER MANHOLE REPLACEMENT AT CARGILL

PWC has considered the BID submitted by you for the above-described work in response to its Advertisement for Bids dated _____ and Instructions to Bidders.

You are hereby notified that your BID has been accepted for items in the amount of
\$_____.

You are required by the Instructions to Bidders to execute the Agreement and furnish the required Performance Bond, Payment Bond, and Certificates of Insurance within ten (10) calendar days from the date of this NOTICE to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, PWC will be entitled to consider all your rights arising out of PWC's acceptance of your BID as abandoned and as a forfeiture of your Bid Bond. PWC will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to PWC.

Dated this _____ day of _____, 2022

FAYETTEVILLE PUBLIC WORKS COMMISSION

BY: _____

Trent Ensley

Procurement Manager

**FAYETTEVILLE PUBLIC WORKS COMMISSION
FAYETTEVILLE, NORTH CAROLINA**

ACCEPTANCE OF AWARD

SANITARY SEWER MANHOLE REPLACEMENT AT CARGILL

Receipt of the preceding NOTICE OF AWARD is hereby acknowledged this the _____

day of _____, 2022.

CONTRACTOR

By:_____

Title:_____

State of North Carolina
Cumberland County

CONSTRUCTION AGREEMENT

THIS CONSTRUCTION AGREEMENT ("Agreement" or "Contract") is made by and between the Fayetteville Public Works Commission ("PWC"), a North Carolina public authority, and _____ ("Contractor"), a _____ (*specify type of legal entity, state of formation, and if not formed in NC, confirm NC registration to do business*) (each of each of PWC and Contractor is a "Party" and both are collectively the "Parties") as of the date of execution last written below (the "Effective Date"). The Parties agree as follows:

1. The Construction Project. Contractor shall furnish and bear solely the entire cost of all labor and materials necessary for the construction and/or renovation of the Project (defined hereinbelow) as specified in the Contract Documents (defined hereinbelow) and complete all work on the Project in a workmanlike manner in strict accordance with the Contract Documents, schedule delivery of the new materials, furnish and bear solely the entire cost of all supervision, contract administration, equipment, tools, and other means necessary to complete the Project, perform every obligation imposed by the Contract Documents, and be solely responsible for the clean-up and disposal of all materials and debris relating to or arising from the construction and renovation, subject to any exceptions that are specifically set forth in the Contract Documents. Except as otherwise specifically provided in the Contract Documents, Contractor is solely responsible for all construction means, methods, techniques, sequences, procedures, safety precautions or programs, supervising, coordinating, and performing all the work necessary to complete the Project; provided, however, PWC shall have the right, without incurring any liability to the Contractor, to suspend Contractor's performance when a PWC employee, in his or her opinion, observes a safety violation involving a threat to life or imminent danger of bodily injury, and the suspension shall remain in effect until Contractor remedies the safety violation.

2. Terms. Capitalized terms used in this Agreement have the meaning specified below:

"Business Day" means each calendar day that is not a Saturday, Sunday, holiday observed by the federal government for its employees, or holiday observed by the State of North Carolina for its employees.

"Completion of the Project" means: (i) the Project is completed in accordance with this Agreement, except for punch list items; (ii) PWC has received any required temporary or final certificate of occupancy from the governmental agency with jurisdiction over the Project; and (iii) the registered architects or engineers (the "Designer(s)") who designed portions or components of the Project have issued certificates of Completion of the Project as to those portions or components.

"Contract Documents" means the following documents that were either made available to Contractor by PWC during the bid solicitation process (including Drawings) or executed by the Parties or both, which are all incorporated by reference herein:

- a. This Agreement
- b. Request for Proposal (including General Terms and Conditions)

- c. Bid Proposal Form
- d. Notice of Award
- e. Acceptance of Award
- f. Performance Bond
- g. Payment Bond
- h. Notice to Proceed
- i. Certificate of Insurance
- j. Copy of General Contractor's License
- k. Technical Specifications
- l. Sewer Permit
- m. Project Drawings
- n. Addenda

The following documents may be delivered or issued on or after the Effective Date of the Agreement and may not be attached to this Agreement, but are considered Contract Documents when executed by the Parties:

- o. Notice to Proceed and Acceptance of Notice
- p. Work Change Directive(s)
- q. Change Order(s)
- r. Field Order(s)

There are no Contract Documents other than those identified in this Agreement. The Contract Documents may only be amended, modified, or supplemented as provided in this Agreement in a writing signed by the Parties.

“Fault” means a breach of contract by Contractor, negligent, reckless, or intentional act(s) or omission(s) constituting a tort under applicable statutes or common law by one or more Responsible Persons, or violation(s) of applicable statute(s) or regulation(s) by a Responsible Person.

“Project” means Sanitary Sewer Manhole replacement at Cargill, as more specifically set forth in the Contract Documents.

“Responsible Person” means the Contractor and each of its employees, agents, representatives, subcontractors, or other persons and entities for which Contractor may be liable or responsible as a result of any statutory, tort, or contractual duty.

The terms used in this Agreement shall have the meaning as stated herein and in the Definitions and Terminology. In the event of a conflict between the terms of this Agreement and any other component(s) of the Contract Documents, the terms of this Agreement shall govern.

3. Contract Price. PWC shall pay Contractor for Completion of the Project in accordance with the Contract Documents the amount identified in the accepted Bid Form of Contractor, being in the total amount of \$_____ (the “Price”). Contractor understands and acknowledges that the Price is derived from a specific appropriation of funds provided for the Project. Contractor agrees and acknowledges the Price is equal to the aggregate cost of all work to be done on the Project, including all labor, materials, equipment, apparatus, and supplies, set in accordance with the amount specified on the Bid Form submitted by Contractor and accepted by PWC.

4. Contract Times. The Parties shall perform their obligations under this Agreement in compliance with all scheduling deadlines set forth in the Contract Documents. The Contractor shall commence the work to be performed under this Agreement on a date to be specified in accordance with the Notice to Proceed issued by PWC. Contractor shall achieve Completion of the Project no later than 90 consecutive calendar days after _____, plus any modifications thereof allowed in accordance with the Contract Documents (the "Completion Date").

5. Payment. PWC shall pay Contractor in installment payments plus a final payment, as set forth in the Contract Documents. For each applicable installment payment, Contractor shall submit an application for payment in accordance with the Contract Documents. An application for payment will be processed by PWC as provided in the Contract Documents. Such installment payments shall reflect the actual cost of the work, not to exceed in total the Price, and the allocable portion of the total Price for said installment. PWC shall make payment to the Contractor, less any applicable retainage set forth in the Contract Documents; provided, however, that PWC may withhold all or a portion of a payment on account of (1) incomplete work, (2) defective or nonconforming work, (3) claims filed or a reasonable basis to believe that such claims will be filed imminently, (4) failure of the Contractor to make payments properly for labor, services, materials, equipment or subcontracts, (5) damages caused to PWC or another party by one or more Responsible Persons, or (6) failure to comply with the terms and conditions of this Agreement. In the final payment, PWC shall pay the balance of the Price, including all retained amounts, less any Liquidated Damages and other applicable damage and claim amounts, to Contractor within forty-five (45) days of Completion of the Project; provided, however, that PWC may withhold a reasonable sum from the final payment to ensure correction of any final items or condition on the Project.

6. Retainage. Subject to any restrictions applicable to any federal grant funds that may be utilized for the Project, PWC may, in its discretion, retain up to five percent (5%) of any periodic payment due Contractor; provided, however, when the Project is fifty percent (50%) complete, PWC, with written consent of the surety, shall not retain any further retainage from periodic payments due Contractor if Contractor continues to perform satisfactorily and any nonconforming work identified in writing prior to that time by PWC or the Designer has been corrected by Contractor and accepted by PWC or the Designer, and provided further that full payment, less authorized deductions, shall also be made for those line item trades that have reached one hundred percent (100%) completion of their contract obligations by or before the Project is fifty percent (50%) complete if Contractor has performed satisfactorily in accordance with G.S. 143-134.1(b2), contingent upon PWC's receipt of an approval or certification from the Designer that the work performed by the subcontractor is acceptable and in accordance with the Contract Documents. If PWC determines Contractor's performance is unsatisfactory, PWC may, in its discretion, reinstate retainage for each subsequent periodic application for payment as authorized in this Section up to the maximum amount of five percent (5%). The Project shall be deemed fifty percent (50%) complete when Contractor's gross project invoices, excluding the value of materials stored off-site, equal or exceed fifty percent (50%) of the Price, except the value of materials stored on-site shall not exceed twenty percent (20%) of Contractor's gross project invoices for the purpose of determining whether the Project is fifty percent (50%) complete. Within 60 days after the submission of a pay request and one of the following occurs, as specified in the Contract Documents, PWC, with written consent of the surety, shall release to Contractor all retainage on payments held by PWC: (i) PWC receives a certificate of substantial completion from the Designer in charge of the Project; or (ii) PWC receives beneficial occupancy or use of the Project; provided, however, PWC may in its discretion retain sufficient funds to secure Completion of the Project or corrections on any work. If PWC retains funds, the amount retained shall not exceed two and one-half times the estimated value of the

work to be completed or corrected. Any reduction in the amount of the retainage on payments shall be with the consent of Contractor's surety. The existence of any third-party claims against Contractor or any additive change orders to the Construction Documents shall not be a basis for delaying the release of any retainage on payments. Notwithstanding anything in this Section to the contrary, following fifty percent (50%) completion of the Project, PWC shall be authorized to withhold additional retainage from a subsequent periodic payment, not to exceed five percent (5%), in order to allow PWC to retain two and one-half percent (2.5%) total retainage through the Completion of the Project. In the event that PWC elects to withhold additional retainage on any periodic payment subsequent to release of retainage on a line-item of work pursuant to G.S. 143-134.1(b2), Contractor may also withhold from the subcontractors remaining on the project sufficient retainage to offset the additional retainage held by PWC, notwithstanding the actual percentage of retainage withheld by PWC of the Project as a whole. Neither PWC's nor Contractor's release of retainage on payments as part of a payment in full on a line-item of work pursuant to G.S. 143-134.1(b2) shall affect any applicable warranties on work done by Contractor or subcontractor, and the warranties shall not begin to run any earlier than either PWC's receipt of a certificate of substantial completion from the Designer in charge of the Project or PWC receives beneficial occupancy.

7. Liquidated Damages. Time is of the essence with respect to performance of each of the Parties' obligations under this Agreement. Contractor recognizes and acknowledges that PWC will suffer financial and other losses if the Project is not completed by the Completion Date. The Parties recognize and agree that the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by PWC if the Project is not completed by the Completion Date. Accordingly, instead of requiring any such proof, Contractor and PWC agree that in the event Contractor fails to achieve Completion of the Project by the Completion Date, Contractor shall pay to PWC as liquidated damages to compensate PWC for damages related to the delayed Completion of the Project one thousand dollars (\$1000.00) per day ("Liquidated Damages") for each calendar day Contractor fails to achieve completion of the work by the Completion Date.

8. Contractor's Representations and Warranties. In order to induce PWC to enter into this Agreement, Contractor makes the following representations and warranties to PWC:

a. Contractor is duly licensed in the State of North Carolina to complete all work necessary for the Project, is duly organized, validly existing and in good standing and has all requisite powers, rights, and authority to execute, enter into, and perform this Agreement in accordance with the terms and conditions of this Agreement, and this Agreement constitutes a legal, valid, and binding obligation of Contractor enforceable against it in accordance with its terms.

b. Contractor has read the Contract Documents, and acknowledges and understands all data, materials, specifications, and requirements identified in the Contract Documents.

c. Contractor has visited the site for the Project, conducted a thorough, visual examination of the site and adjacent areas, and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance in completing the Project.

d. Contractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance to complete the Project.

e. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the site and all drawings of physical conditions relating to existing surface or subsurface structures at the site that have been identified in the Contract Documents and any accompanying reports and drawings, and (2) reports and drawings relating to hazardous environmental conditions, if any, at or adjacent to the site that have been identified in the Contract Documents and any accompanying reports and drawings.

f. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, if any, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

g. Based on the information and observations referred to in subsection e. of this Section, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the work at the Price commencing on the commencement date and in accordance with the other terms and conditions of the Contract.

h. Contractor is aware of the general nature of work to be performed by PWC and others at the Site that relates to the work as indicated in the Contract Documents.

i. Contractor has given PWC's Designer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by the Designer is acceptable to Contractor.

j. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the work.

k. Contractor's entry into this Agreement constitutes an incontrovertible representation by Contractor that, without exception, all prices in the Agreement are premised upon performing and furnishing the work required by the Contract Documents.

l. Contractor has no business or personal relationship with any PWC Commissioner, officer, director, manager, or supervisor and Contractor covenants to disclose immediately to PWC any such relationship that develops during the performance of work on the Project.

9. Contractor's Payment Obligations. Contractor shall pay all of its obligations arising out of or in connection with the Project in a timely manner to all persons supplying materials in the prosecution of the work and to all laborers and others employed thereon.

10. Performance and Payment Bonds. Contractor shall obtain and deliver to PWC a performance bond in the amount of one hundred percent (100%) of the Price, conditioned upon the faithful performance of the Project and all work in accordance with the Contract Documents, which bond shall be solely for the protection of PWC. Contractor shall obtain and deliver to PWC a payment bond in the amount of one hundred percent (100%) of the Price, conditioned upon the prompt payment for all labor or materials for which the Contractor or one or more of its subcontractors is liable, which payment bond shall be solely for the protection of the persons furnishing materials or performing labor for which the Contractor is liable. The performance bond and the payment bond shall be executed by one or more surety companies legally authorized to do business in the State of North Carolina, shall become effective upon the awarding of the construction contract by PWC to Contractor, and shall at all times comply with the requirements set forth in Article 3 of North Carolina General Statutes Chapter 44A. In the event PWC deems the surety or sureties upon any bond necessary for this Agreement and the completion of the Project, or if for any reason, such bond ceases to be adequate to cover the performance and/or payment of the work, Contractor shall, at its expense, within five (5) days after the receipt of notice from PWC, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to PWC. In such event no further payment to Contractor shall be deemed to be due under this Agreement until new or additional security for the performance and payment of the Project shall be furnished in manner and form satisfactory to PWC. Contractor understands and acknowledges that PWC, as a public authority, is not subject to the provisions of Articles 1 and 2 of Chapter 44A of the General Statutes, in accordance with G.S. 44A-34 and applicable law.

11. Contractor's Damage Repair Obligations. Contractor shall be responsible for all damages to the property of the City of Fayetteville and of PWC that may result from the normal procedure of a Responsible Person's actions in the prosecution of the work or that may be caused by or result from the negligence of a Responsible Person during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. Contractor shall promptly restore all such property so damaged to a condition as good as it was immediately prior to Contractor initiating the work on the Project.

12. Defective Work. The Project shall be subject to observation and approval by PWC, Designer, and representatives of governmental agencies with jurisdiction over the Project. PWC and Designer shall be entitled to enter at all reasonable times the premises subject to construction or renovation to inspect the work performed by or on behalf of Contractor, provided that such entry and inspection does not materially interfere with the progress of construction. Contractor shall correct promptly, at no cost to PWC, all work reasonably rejected by PWC or by its representatives. Should Contractor fail to correct rejected work, PWC may, acting in its sole discretion, correct such work and the Contractor shall pay PWC's actual costs of correction and any other applicable amounts identified in the Contract Documents.

13. As-Built Drawings. Contractor shall maintain during the progress of the Project as-built drawings indicating the current status of the Project as actually performed. Upon Completion of the Project, Contractor shall prepare a final version of such as-built drawings and submit them to PWC for approval.

14. Assignment. This Agreement shall be binding upon and inure to the benefit of the Parties, their legal representatives, successors, and assigns. Contractor may not assign, transfer, convey, or encumber, whether voluntarily or by operation of law, this Agreement or any obligations, rights under, or interests in this Agreement to a third party without the prior

written consent of PWC; and, specifically, but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

15. Indemnity. Contractor shall indemnify, defend, and hold harmless PWC and its Commissioners, officers, employees, agents, and representatives and the City of Fayetteville and its elected officials, managers, employees, agents, and representatives and Designer (collectively "Indemnitees") from and against all claims, actions, liabilities, damages, losses, costs, and expenses (including, without limitation, injury to or death of any persons and damage to property, economic and consequential damages and attorneys' fees) asserted by one or more third parties against one or more of the Indemnitees if the Fault of one or more Responsible Persons is a proximate cause of the loss, damage, or expense indemnified. Contractor's obligation to indemnify, defend, and hold harmless the Indemnitees shall survive the termination of this Agreement.

16. Insurance. Contractor shall maintain during the completion of the Project and for at least three (3) years thereafter the insurance coverage set forth in the Contract Documents, which insurance shall be placed with insurance companies authorized to do business in the State of North Carolina and rated A minus VII or better by the current edition of Best's Key Rating Guide or otherwise approved in writing by PWC. Prior to initiating any work on the Project, Contractor shall deliver certificates of insurance confirming each such coverage required by the Contract Documents, and Contractor shall direct its insurers to provide annually to PWC certificates confirming each such coverage during the coverage period. PWC shall be named as an additional insured in the comprehensive automobile and commercial liability insurance policies. Commercial general liability coverage shall be written on an "occurrence" basis. Contractor shall not reduce or allow the required insurance coverages to lapse without PWC's prior written approval. All policies for insurance must be endorsed to contain a provision giving PWC a thirty (30) calendar day prior written notice by certified mail of any cancellation of that policy or material reduction in coverage. Should a notice of cancellation be issued for non-payment of premiums or any part thereof, or should Contractor fail to provide and maintain certificates as set forth herein, PWC shall have the right, but shall not have the obligation, to pay such premium to the insurance company or to obtain such coverage and to deduct such payment from any sums that may be due or become due to Contractor, or to seek reimbursement for said payments from Contractor. Any such sums paid by PWC shall be due and payable immediately by Contractor upon notice from PWC. The insurance provisions of this Agreement shall not be construed as a limitation on Contractor's responsibilities and liabilities pursuant to the terms and conditions of this Agreement. Contractor's obligation to maintain insurance for three (3) years after Completion of the Project shall survive the termination of this Agreement.

17. Warranty. The Contractor hereby grants to PWC a warranty on all materials and workmanship involved in the Project for a period of one (1) year from the Completion Date and a period of two (2) years from the Completion Date for any latent structural defects. PWC shall give written notice to Contractor of any claim under this Section within the time specified hereinabove. This warranty shall be in addition to, and not in derogation of, all other rights and privileges which PWC may have under law, equity, or instrument, and shall survive the Completion Date and the final settlement and shall be binding on Contractor notwithstanding any provision in any other writing executed by PWC heretofore or contemporaneous with the execution of the Agreement or prior to the Completion Date.

18. Waiver. No failure on the part of any party to exercise, and no delay in exercising, any right, power, or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any right hereunder preclude any other or further cumulative and not exclusive of any remedies provided by law. This Agreement shall be binding upon and inure to the benefit of the parties, their legal representatives, successors, and assigns. This Agreement may not be assigned, transferred, conveyed, or encumbered, whether voluntarily or by operation of law, by either party without the prior written consent of the other party, which consent shall not be unreasonably withheld.

19. Law. THIS AGREEMENT SHALL BE GOVERNED BY AND INTERPRETED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NORTH CAROLINA WITHOUT GIVING EFFECT TO THE CHOICE OF LAW PROVISIONS THEREOF. The Contractor shall at all times comply with all applicable Federal, state, and local laws and building codes in the performance of its obligations under the Agreement.

20. Dispute Resolution. In the event of any dispute, controversy, or claim of any kind or nature arising under or in connection with this Agreement (a "Dispute") and involving any two or more of the following parties, PWC, Designer, Contractor or any subcontractor of Contractor, the party initiating the Dispute shall serve written notice of a Dispute on the party(ies) to the dispute, and those parties shall endeavor to settle the dispute first through direct, informal discussions between the parties' selected representatives. Any such representative(s) shall have binding authority to settle the Dispute. In the event the parties do not settle the Dispute within ten (10) days from the date of written notice of the Dispute, any party to the Dispute may, by written notice to the other party(ies), engage a mediator certified under the laws of the State of North Carolina to mediate the Dispute within thirty (30) days of such notice. The parties to the Dispute shall attend mediation in good faith. In the event mediation is unsuccessful, any party to the dispute may initiate arbitration proceedings. Any controversy or claim arising out of or relating to the Contract Documents, or the breach thereof, shall be settled by binding arbitration administered by the American Arbitration Association under its Construction Industry Arbitration Rules, and judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof. All of the foregoing dispute resolution procedures shall be held in Cumberland County, North Carolina. The costs of the mediator and arbitrator in a dispute resolution process shall be divided equally among the parties to the process; provided, however, PWC shall bear at least one-third of the cost if PWC is a party to the dispute resolution and the remainder of the cost shall be divided equally among the other parties participating in the dispute resolution. PWC shall, in its contractual arrangements with Designer, and Contractor shall, in its contracts with subcontractors and they in their contracts with lower-tier subcontractors authorize and direct such parties to participate in the dispute resolution procedures set forth in this Section. Unless otherwise directed in writing by PWC, Contractor shall continue the Project and maintain compliance with the scheduling deadlines set forth in the Contract Documents during any dispute resolution proceedings. If Contractor continues to perform, PWC shall make payments due for the continued performance in accordance with this Agreement. The provisions of this Section shall not extend any applicable statutes of limitation or repose.

21. Execution; Modification; Entire Agreement; Severability. This Agreement may be executed in counterparts with the same effect as if the signatures to each counterpart were upon a single instrument, and all such counterparts together shall be deemed an original of this Agreement. For purposes of this Agreement, a facsimile copy or scanned copy or photocopy of a party's signature shall be sufficient to bind such party. This Agreement shall be subject to

execution by electronic means in accordance with Article 40 of Chapter 66 of the North Carolina General Statutes. No oral communication, promise, understanding, or agreement before, contemporaneous with, or after the execution of this Agreement shall affect or modify any of the terms and conditions and obligations of the Contract Documents. The Contract Documents shall be modified only by a subsequent writing signed by both Parties. The Contract Documents shall be conclusively considered to contain and express all the terms and conditions agreed upon by the Parties, notwithstanding any prior or contemporaneous written communication, promise, understanding or agreement. Should any provision of this Agreement or any of the Contract Documents at any time be in conflict with any law, statute, rule, regulation, order, or ruling and thus be unenforceable, or be unenforceable for any other reason, then the remaining provisions of this Agreement shall remain in full force and effect and the court or arbitrator shall give the offending provision the fullest meaning and effect permitted by law. The titles of the Sections throughout this Agreement are for convenience only and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction, or meaning of the provisions of this instrument.

22. Notices. Any notice which either Party is required or desires to give the other hereunder shall be deemed sufficiently given if, in writing, it is delivered personally, or sent by certified U.S. mail, return-receipt requested, postage prepaid, to the addresses listed herein below, or such other address as either Party shall give to the other Party by written notice in accordance herewith. Any notice given herein by personal delivery shall be deemed delivered when received. Any properly addressed notice given herein by certified mail shall be deemed delivered on third Business Day after the same is deposited in an official United States Post Office, postage prepaid, or if sooner upon the date when the return receipt therefore is signed, or refusal to accept the mailing by the addressee is noted thereon by the postal authorities.

To PWC:
Fayetteville Public Works Commission
Attn: Elaina L. Ball, CEO/General Manager
PO Box 1089
Fayetteville, NC 28302

To Contractor:
[INSERT MAILING ADDRESS]

23. Termination. PWC may terminate this Agreement immediately if during the progress of the work or during the warranty period, the Contractor:

- a. Persistently fails to prosecute the work properly and in accordance with this contract, including but not limited to include failure to provide sufficient crews, equipment, or resources, or failure to adhere to the schedule;
- b. Demonstrates disregard for the policies, procedures, or requirements of PWC;
- c. Demonstrates complete disregard of the authority of PWC or its designated representatives; or
- d. Violates in any substantial way the provisions and requirements of this Agreement.

Such termination shall be effective upon written notice to Contractor and its surety. PWC may terminate the contract for its convenience by providing Contractor at least seven (7) calendar

days prior written notice, in which event Contractor shall be paid for all work completed, plus other expenses as mutually agreed upon between PWC and Contractor.

24. Compliance. Contractor hereby acknowledges that "E-Verify" is the federal E-Verify program operated by the US Department of Homeland Security and other federal agencies which is used to verify the work authorization of newly hired employees pursuant to federal law and in accordance with Article 2, Chapter 64 of the North Carolina General Statutes. Contractor further acknowledges that all employers, as defined by Article 2, Chapter 64 of the North Carolina General Statutes, must use E-Verify and after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with N.C.G.S. §64-26(a). Contractor hereby pledges, attests, and warrants through execution of this Agreement that Contractor complies with the requirements of Article 2, Chapter 64 of the North Carolina General Statutes and further pledges, attests, and warrants that all subcontractors currently employed by or subsequently hired by Contractor shall comply with all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement. Contractor hereby further acknowledges that the execution and delivery of this Agreement constitutes Contractor's certification to PWC and to the North Carolina State Treasurer that, as of the date of the Effective Date of this Agreement, Contractor is not listed on (a) the Final Divestment List created and maintained by the North Carolina Department of State Treasurer pursuant to the Iran Divestment Act of 2015, Chapter 147, Article 6E of the General Statutes of North Carolina (the "Iran Divestment Act"); or (b) the list of companies that the North Carolina State Treasurer determines to be engaged in a boycott of Israel in accordance with Article 6G of Chapter 147 of the General Statutes of North Carolina. Contractor represents and warrants to Commission that Contractor, and all persons and entities owning (directly or indirectly) an ownership interest in it: (i) are not, and will not become, a person or entity with whom a party is restricted from doing business with under regulations of the Office of Foreign Asset Control ("OFAC") of the Department of the Treasury (including, but not limited to, those named on OFAC's Specially Designated and Blocked Persons list) or under any statute, executive order (including, but not limited to, the September 24, 2001, Executive Order 13224 Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism), or other governmental action; and (ii) are not knowingly engaged in, and will not knowingly engage in, any dealings or transactions or be otherwise associated with such persons or entities described in clause (i) above. Contractor also shall at all times during the term of this Agreement comply with Executive Order 11246, including but not limited to the Equal Opportunity Clause requirements set forth in 41 C.F.R. § 60-1.4. Contractor shall abide by the requirements of 41 CFR 60-300.5(a) and 60-741.5(a) prohibiting discrimination against qualified individuals on the basis of protected veteran status or disability and requiring affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans and individuals with disabilities.

IN WITNESS WHEREOF, the Parties have executed this Agreement by their duly authorized representatives.

Fayetteville Public Works Commission

[CONTRACTOR FULL LEGAL NAME]

By: _____
Elaina L. Ball, CEO/General Manager

Date: _____

By: _____
(Printed Name) _____, (Title)
Date: _____

**This instrument has been preaudited in the
manner required by the Local Government Budget
and Fiscal Control Act (N.C. Gen. Stat. § 159-1 et seq.).**

By: _____
Rhonda Haskins, Chief Financial Officer

Approved as to form:

James P. West, Chief Legal Officer

PERFORMANCE BOND

Date of Execution: _____

Name of Principal: _____

Name of Surety: _____

Name of Contracting Body: Fayetteville Public Works Commission, NC

Amount of Bond: _____

PROJECT: REPLACEMENT OF THE SANITARY SEWER MANHOLE AT CARGILL

KNOW ALL MEN BY THESE PRESENTS, That We, the Principal and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these present.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal entered into a certain Contract with the Contracting Body, identified as shown above and hereto attached.

NOW, THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions there of that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any Guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under the several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

(Proprietorship or Partnership)

ATTEST:

By: _____

Title: _____
(Corporate Secretary or
Assistant Secretary, Only)

Witness:

Countersigned:

N.C. Licensed Resident Agent

Name and Address-(Surety Agent)

Surety Company Name and N.C.
Regional or Branch Office Address

CONTRACTOR:

(Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, Corporate President or
Vice-President, Only)

(CORPORATE SEAL)

SURETY COMPANY:

By: _____

Title: _____
(Attorney in Fact)

(SURETY CORPORATE SEAL)

PAYMENT BOND

Date of Execution: _____

Name of Principal: _____

Name of Surety: _____

Name of Contracting Body: Fayetteville Public Works Commission, NC

Amount of Bond: _____

PROJECT: REPLACEMENT OF THE SANITARY SEWER MANHOLE AT CARGILL

KNOW ALL MEN BY THESE PRESENTS, that We, the PRINCIPAL and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal entered into a certain Contract with the Contracting Body, identified as shown above and hereto attached.

NOW, THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions there of that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under the several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in _____ counterparts.

Witness:

CONTRACTOR:

(Trade or Corporate Name)

(Proprietorship or Partnership)

By: _____

ATTEST:

Title: _____

(Owner, Partner, or Corporate
President or Vice-President, Only)

By: _____

Title: _____
(Corporate Secretary or
Assistant Secretary, Only)

(CORPORATE SEAL)

SURETY COMPANY:

Witness:

By: _____

Countersigned:

N.C. Licensed Resident Agent

Name and Address-Surety Agent

Surety Company Name and N.C.
Regional or Branch Office Address

(SURETY CORPORATE SEAL)

NOTICE TO PROCEED

TO: _____ DATE: _____

PROJECT: REPLACEMENT OF THE SANITARY SEWER MANHOLE AT CARGILL

You are hereby notified to commence Work in accordance with the Contract dated _____, 2022, on _____, 2022, and you are to complete the Work by _____, 2022.

FAYETTEVILLE PUBLIC WORKS COMMISSION

BY: _____

Trent Ensley

Procurement Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED
is hereby acknowledged this the _____ day
of _____, 2022.

CONTRACTOR

BY: _____

TITLE: _____

CERTIFICATE OF INSURANCE

COPY OF GENERAL CONTRACTOR'S LICENSE

TECHNICAL SPECIFICATIONS

DIVISION 2 SITE WORK

02222 EXCAVATION AND BACKFILLING FOR UTILITY SYSTEMS

GENERAL

Work described in this section consists of the excavation, backfill, compaction, and finish grading required to install the utility systems. The intent and purpose of these specifications is to require a complete and satisfactory installation in every respect and any defect in material or workmanship shall be cause for the replacement and correction of such defect as directed by the Public Works Commission.

RELATED SECTIONS

- A. 02305 – Pipe Bursting
- B. 02660 – Water Distribution
- C. 02730 – Sanitary Sewer Systems
- D. 02732 – Sewage Force Mains
- E. Chapter 24 of the City of Fayetteville Ordinance (most recent version)

MATERIALS

Suitable soil materials are defined as those in accordance with AASHTO Soil Classification Groups A-1, A-2-4, A-2-5 and A-3 (or in accordance with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, SP, SC) as determined by the Public Works Commission. Suitable material shall be free from roots, organic matter, trash, debris, frozen material or stones larger than three (3) inches in any dimension.

Unsuitable soil materials are defined as those in accordance with AASHTO Soil Classification Groups A-2-6, A-2-7, A-4, A-5, A-6, A-7 (or in accordance with ASTM D2487 soil classification groups GC, ML, MH, CL, CH, OL, OH, and PT) as determined by the Public Works Commission. Unsuitable material as defined above shall be replaced with select material as determined by the Public Works Commission.

Suitable materials determined by the Public Works Commission as too wet or too soft to provide a stable subgrade, foundation, or fill will be deemed as unsuitable regardless of soil classification. Materials deemed unsuitable shall be conditioned or replaced, as directed by the Public Works Commission. The Contractor shall recondition and stockpile the materials at no additional cost to the Public Works Commission.

EXCAVATION

All excavation shall be to the lines and grades indicated. The work shall consist of the excavation, placement, and compaction of suitable material as outlined in this Specification and proper disposal of all unsuitable materials. During excavation, suitable material for backfilling shall be stockpiled. The stockpiles shall be protected from contamination by unsuitable excavated material or other material. If any material becomes unsuitable, such material, if directed, shall be removed and replaced with suitable on-site or imported material from approved sources at no additional cost to the Public Works Commission.

Where the line parallels a creek and/or ditch the excavated material shall be stockpiled opposite the creek, with the trench separating the two. Adequate drainage shall be provided for the stockpiles and surrounding areas by means of ditches, dikes, or other approved methods. Grading shall be done to prevent surface water from entering the excavation. Any water within the trench shall be removed.

Suitable excavated material shall be stockpiled or placed in the excavation's backfill. Excavation and filling shall be performed in a manner and sequence that will provide drainage at all times. Unauthorized over excavation shall be backfilled with select bedding material at no additional cost to the Public Works Commission. The Contractor, at their expense, shall properly dispose of all excess excavated material unless directed to place it in another area of the project by the Public Works Commission. The Contractor's obligation to remove and dispose of excess materials shall in no manner convey to him any rights of property in any material taken from any excavation.

It shall be the Contractor's responsibility to investigate the site and existing conditions. No compensation will be allowed due to excavation and/or grading being different than anticipated.

TRENCH EXCAVATION

The trench width shall be in accordance with the PWC standard details. All work shall be in accordance with the applicable OSHA regulations.

The subgrade beneath the centerline of the pipe shall provide uniform support for each section of the pipe. Stones three (3) inches or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, shall be removed.

Where unsuitable material is encountered at the elevation established for installation of pipe or structures, additional undercut excavation shall be done as directed by the Public Works Commission. The additional undercut excavated area shall be backfilled with stone bedding material. Unauthorized undercut excavation shall be backfilled with stone bedding material and compacted as directed by the Public Works Commission. The Contractor shall conduct undercut operations in such a way that the Public Works Commission can take the necessary measurements before any backfill is placed. Any material removed and backfilled without the approval of the Public Works Commission, and/or all necessary measurements taken, and/or to a depth, length or width exceeding the dimensions shall not be considered undercut excavation and will not be paid for such.

Where unsuitable material is encountered at the elevation established for installation of roads, parking lots, or other paved areas, additional undercut excavation shall be done as directed by the responsible agency (i.e., City of Fayetteville, Town of Hope Mills, NCDOT, etc.). The additional undercut excavated area shall be backfilled with stone bedding material. Unauthorized undercut excavation shall be backfilled with stone bedding material and compacted as directed by the responsible agency. The Contractor shall conduct undercut operations in such a way that the responsible agency can take the necessary measurements before any backfill is placed. Any material removed and backfilled without the approval of the responsible agency, and/or all necessary measurements taken, and/or to a depth, length or width exceeding the dimensions shall not be considered undercut excavation. All undercut excavation shall be in accordance with the NCDOT Standard Specification for Roads and Structures (most recent edition), or the responsible agency's specifications.

Excavation for manholes, meter vaults, or similar structures shall leave a minimum of 12-inches clear space around the structure. Removal of unsuitable material shall be as specified above. Preparation of the subgrade shall be in accordance with the applicable detail and as directed by the Public Works Commission.

PIPE LAYING

All pipe shall be installed in accordance with PWC Specification Section 02660 – Water Distribution, Specification Section 02730 – Sanitary Sewer Systems, and/or PWC Specification Section 02732 – Sewage Force Mains.

TRENCH SAFETY

All excavations shall comply with all Federal, State, and local rules and regulations. The Contractor shall have a trenching and shoring "competent" person on the job at all times when there is an open excavation. Under no circumstance shall an employee of the Public Works Commission be considered the "competent" person for the operation.

TRENCH STABILIZATION (SHORING)

The Contractor shall furnish, install, and maintain all necessary shoring to ensure a safe excavation. The method of shoring and excavation shall be in strict accordance with OSHA Regulations. The Contractor shall be responsible for installation, maintenance, and removal of all trench stabilization measures. The Contractor shall be responsible for any damage to adjacent structures resulting from the installation, maintenance, removal, or absence of trench stabilization measures.

DEWATERING

Excavations shall be kept dry at all times. Any required dewatering shall be the Contractor's responsibility. The Contractor shall be responsible for any damage to the adjacent property resulting from the installation, maintenance, discharge, and removal of the dewatering system. All discharge from the dewatering system shall be in accordance with the applicable erosion control rules and regulations.

BACKFILL

Backfill shall consist of suitable material free from debris, stone, etc. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. The backfill operation shall be conducted to prevent damage and/or movement of the pipe.

Backfill material in trenches shall be placed in layers not exceeding six (6) inches loose thickness to a point at least 12-inches above the pipe compacted to 90 percent maximum density. The remainder of the trench shall be backfilled in layers not exceeding six (6) inches in loose thickness compacted as specified in subparagraph COMPACTION. Each layer shall be thoroughly compacted by an approved mechanical tamping device.

Backfill material around structures shall be placed in a manner that the structure will not be damaged. No backfill shall be placed around manholes, thrust blocks, or similar structures until the concrete has been allowed to cure for three (3) days. The backfill material shall be compacted as specified in subparagraph COMPACTION.

No backfilling will be allowed when weather conditions prevent compliance with these Specifications.

BORROW EXCAVATION (Select Backfill)

Borrow excavation material shall be supplied by the Contractor when sufficient quantities of suitable materials are not available within the project limits. The borrow material shall be approved by the Public Works Commission and shall not contain roots, root mats, stumps, highly plastic clay or other unsatisfactory materials. All borrow material shall be in accordance with the NCDOT Standard Specification for Roads and Structures, most recent edition.

COMPACTION

Backfill shall be compacted in accordance with the following table as a percentage of the maximum density at optimum moisture content as determined by the Standard Proctor Test, ASTM D-698.

<u>Area</u>	<u>Percent ASTM D-698</u>
<u>Maximum Dry Density</u>	
Around and 1' above top of pipe	95
Remaining trench (within 4' of subgrade)	95
Pavement subgrade and shoulders	
Last 1' of fill (below subgrade)	100
Last 3' of fill to 12" below subgrade	98
Base material	100
Adjacent to structures (Areas not paved)	95
Under structures	98
Utility Outfalls (Cross Country)	95

Compaction testing may be performed at the option of the PWC Project Coordinator, or as required by the responsible agency (i.e., City of Fayetteville, NCDOT, etc.). Compaction testing shall be done in accordance with the responsible agency's requirements. Deficiencies shall be corrected by the Contractor without additional cost to PWC.

FINISHED EXCAVATION

All areas covered by the project shall be uniformly graded to the established elevations and approved cross sections. Ditches shall be graded to permit proper drainage. Newly graded areas shall be protected from traffic and/or from erosion, and any settlement or washing prior to acceptance shall be repaired and the required grades re-established. Ditches and drains along the subgrade shall be maintained to drain at all times. The finished subgrade shall be protected and maintained by the Contractor. The storage or stockpiling of materials on the finished subgrade shall not be permitted. No base course or pavement shall be laid until the subgrade has been checked and approved. All work shall be conducted in accordance with the environmental protection requirements of the Contract.

DIVISION 2

SITE WORK

02272 EROSION CONTROL - GENERAL PROVISIONS

GENERAL

The Contractor shall be responsible for conducting his site grading and drainage operations in such manner as to prevent or lessen excessive soil erosion of the construction site work areas. He shall at all times provide satisfactory means to prevent or minimize the movement and washing of large quantities of soil. The Contractor is expected to review his site grading and drainage operations periodically to determine the areas most susceptible to erosion by excessive rainfall and periodically maintain all installed measures for the project duration. The Contractor shall correct any deficiencies or problem areas as directed by the Owner or the North Carolina Department of Environment and Natural Resources (NCDENR) inspector within 48 hours.

EXECUTION

The Contractor's attention is directed to the fact that unless exposed earth areas are properly cared for during construction, they may result in substantial sedimentation damage downstream from the construction area. He shall at all times provide satisfactory means to prevent or minimize the movement and washing of quantities of soil onto pavements or into adjacent ditches, swales, inlets, and drainage pipes, to avoid the possibility of these structures becoming clogged with soil. Should this happen as a result of erosion at the site of this construction, the Contractor will be required to immediately provide means for removal of the soil and/or debris from the structures to restore the proper functioning of these structures. The Contractor shall assume all responsibilities to the affected property owners for correction of all damages. The Contractor is expected to review his site grading and drainage operations periodically with the Owner with the view in mind of determining the areas most susceptible to erosion by excessive rainfall and shall take necessary temporary measures in sufficient time to minimize the washing away of the site soils that would likely occur before the areas are finished graded, topsoiled and planted. The temporary measures to be provided by the Contractor at the critical areas may consist of, but not limited to, any one or a combination of the following, or by other approved means selected by the Contractor:

- Silt Fence
- Gravel Construction Entrance/Exit
- Inlet Protection

If any earthwork is to be suspended for any reason whatsoever for longer than 15 days, the disturbed areas shall be seeded with temporary vegetative cover or otherwise protected against excessive erosion during the suspended period. Suspension of work in any area of operation does not relieve the Contractor of the responsibility for the erosion control and temporary measures will not be considered cause for a change in the price bid.

MAINTENANCE

The Contractor shall inspect and maintain each erosion control measure until the project is stabilized and accepted. After each significant rainfall, the Contractor shall remove and dispose of silt accumulation

from each individual measure. The following maintenance may be required for each specific erosion and sediment control measure:

Silt Fence: Fabric shall be removed and replaced whenever deteriorated to such an extent the effectiveness is reduced. The toe of the fabric shall be buried a minimum of 6 inches.

Gravel Construction

Entrance/Exit: Periodic top dressing with two inches (2") of graded stone. Remove all objectionable materials spilled, washed or tracked onto public roadways.

Sediment

Trap: Remove sediment and restore trap to original dimensions when accumulated silt volume equals $\frac{1}{2}$ the design depth. Replace the contaminated gravel facing.

Gravel Inlet

Protection: Remove sediment as necessary to provide adequate volume. Replace contaminated gravel facing if required.

Rip-Rap: Make repairs to dislodged stone and/or supplement as required if erosion occurs during heavy rainfalls.

REMOVAL

After the area has been stabilized and the project accepted, the Contractor shall remove all temporary erosion and sediment control measures. Silt fences shall be removed, sediment traps/pits and/or basins filled with suitable soil, compacted and seeded. The materials removed shall remain the property of the Contractor and shall be disposed of off-site, or may be reused in other locations if approved by the Owner.

DIVISION 2

SITE WORK

02273 TEMPORARY SILT FENCE

GENERAL

The work covered by this section consists of furnishing, installing, maintaining and removing a water permeable filter type silt fence for the purpose of removing suspended particles from the water passing through it.

The quantity of temporary silt fence to be installed will be affected by the actual conditions which occur during the construction of the project. The quantity of temporary silt fence may be increased, decreased, or eliminated entirely at the direction of the Owner. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

MATERIALS

Either wood posts or steel posts may be used. Wood posts shall be a minimum of 6 feet long, at least 3 inches in diameter, and straight enough to provide a fence without noticeable misalignment. Steel posts shall be 5 feet long, 1 3/4 inches wide and have projections for fastening the wire to the fence.

Wire fence fabric shall be at least 32 inches high, and shall have at least 6 horizontal wires. Vertical wires shall be spaced 12 inches apart. The top and bottom wires shall be at least 10 gage. All other wires shall be at least 12½ gage.

Burlap shall be at least 36 inches wide and shall weigh at least 6.7 ounces per square yard. Other materials may be used in lieu of burlap, provided those materials have been approved by the North Carolina Department of Environment and Natural Resources (NCDENR).

Wire staples shall be No. 9 staple and shall be at least 1½ inches long.

INSTALLATION

The Contractor shall install temporary silt fence as shown on the plans and details. The silt fence shall be constructed at the locations shown on the plans and at other locations directed by the Owner.

Posts shall be installed so that no more than 3 feet of the post shall protrude above the ground and at least 18 inches are driven into the ground. Filter fabric shall be attached to the wire fence fabric by wire or other acceptable means. The fabric shall be continual in length. The fabric shall extend into a 6"x 6" trench along the uphill side of the fence. The trench shall be backfilled and compacted. Place 6 inches of No. 57 stone along the toe of the fence to secure the fabric in place. The single stripe located approximately 6 inches from the silt fence outer edge should not be visible if the fabric and fencing are installed properly.

DIVISION 2 SITE WORK

02730 SANITARY SEWER SYSTEMS

GENERAL

Sanitary sewer lines and all appurtenant items shall be constructed of materials specified or indicated on the drawings. The intent and purpose of these specifications is to require a complete and satisfactory installation in every respect and any defect in material or workmanship shall be cause for the replacement and correction of such defect as directed by the Public Works Commission.

RELATED SECTIONS

- A. 02211 – Grading, Utilities
- B. 02222 – Excavation and Backfilling for Utility Systems
- C. 02732 – Sewage Force Mains

MATERIALS

SEWER MAINS

Prior to shipment each joint of pipe shall be stamped by an independent testing laboratory, certifying compliance with the specifications stated therein. Pipe sizes indicated shall be understood to be nominal inside diameter of the pipe. All sewer pipe materials shall be either PVC (as specified herein) or ductile iron (as specified herein), unless otherwise approved in writing by the Public Works Commission. Written approval shall be obtained prior to installation.

DUCTILE IRON PIPE

All ductile iron pipe and fittings shall be in strict accordance with ANSI A21.51 and AWWA C151, Class 50 or Class 51, as applicable, in every respect. The working pressure shall be a minimum of 200 psi. Pipe shall be furnished in 18 or 20-foot lengths. All pipe joints used in open trench construction shall be furnished with "push-on" joints, unless otherwise indicated on the drawings or specified. All joints and fittings shall be in accordance with ANSI A21.11 and AWWA C111. All ductile iron interior surfaces shall be lined with two (2) coats of ceramic epoxy to produce a total minimum dry film thickness of 40 mils (Protecto401 or approved equal). The exterior pipe surfaces shall be protected with asphaltic coating as specified in AWWA C151 and C110. Specifications for the ceramic epoxy can be found in Specification Section 09802.

For aerial crossings which are 4 inches through 12 inches in diameter, manufactured restrained joint ductile iron pipe Class 53, or Class 53 flanged ductile iron pipe shall be utilized in accordance with the standard Public Works Commission detail for aerial crossings. Mega-lugs, field-lok, and gripper rings are not an allowable means of restraint for aerial crossings. For aerial crossings larger than 12 inches, or as noted specifically on the plans, flange joint ductile iron pipe, Class 53, shall be utilized in accordance with the standard Public Works Commission details. The location of flanges shall be specifically designed for each application. The flange pipe shall be in accordance with ANSI/AWWA C-115/A21.15. Threads for threaded flange pipe shall be in accordance with ANSI B2.1, shop fabricated as outlined by AWWA 115 with serrated faces furnished on the pipe, completely factory installed. Welding of flanges to the

body of the pipe will not be acceptable. Ductile iron fittings and flanges shall be in accordance with ANSI/AWWA C-110/A21.10 with a minimum working pressure of 250 psi. Gaskets shall be full faced SBR rubber per ANSI/AWWA C-111/A21.11 with a minimum 1/8" thickness. Linings and coatings shall be as outlined for ductile iron pipe.

If the Public Works Commission determines that an expansion coupling is required, it shall be installed as indicated on the drawings. The expansion coupling shall not be buried.

For subsurface water crossings (i.e., streams, wetlands), restrained joint ductile iron pipe shall be utilized. No mechanical restraint systems (e.g., mega-lugs, field-lok gaskets, etc.) shall be utilized. The pipe shall be installed in a casing, in accordance with the approved Public Works Commission detail, unless otherwise specifically approved by the Public Works Commission.

PVC PIPE

PVC sewer pipe and fittings 4 inches thru 15 inches shall be in accordance with ASTM D-3034 with a standard dimension ratio (SDR) of 26 for sewer mains and laterals. Larger diameter pipe (18 inches through 27 inches) shall be in accordance with ASTM F-679, with a SDR of 26. Both pipe and fittings shall be made of PVC plastic having a cell classification of 12454 as specified in ASTM D-1784.

Pipe joining shall be push on elastomeric gasket joints only and the joints shall be manufactured and assembled in accordance with ASTM D-3212. Elastomeric seals shall meet the requirements of ASTM F-477. The pipe shall be furnished with integral bells and with gaskets that are permanently installed at the factory and in accordance with ASTM D-3212 and contain a steel reinforcing ring. PVC sewer pipe shall be made by continuous extrusion of prime green unplasticized PVC and contain identification markings as required by the applicable ASTM standard.

SEWER FITTINGS

Ductile Iron Push-on Fittings:

Ductile iron sewer fittings on PVC mains shall be deep bell, gasketed joint, and air test rated. Gasket grooves shall be machined in the factory. Material shall be ductile iron, in accordance with ASTM A536, Grade 65-45-12 and ASTM F1336. Wall thickness shall meet the requirements of AWWA C153. Gaskets shall have a minimum cross sectional area of 0.20 square inches, and conform to ASTM F477. All ductile iron fittings shall have an interior coating of Protecto 401, or approved equal. All ductile iron fittings on PVC pipe shall provide a flow line that provides a smooth transition between the materials. Ductile iron fittings shall be as manufactured by the Harrington Corporation (Hanco), or approved equal.

Mechanical Joint Fittings:

Joints shall be installed in accordance with AWWA C-600 and shall conform to AWWA Standard C-111. Mechanical joints shall be of the stuffing box type and shall conform to ANSI A21.11 for four inch (4") pipe and larger. Fittings and specials shall be ductile iron and shall be manufactured in accordance with AWWA Standard C-110 (ANSI A21.11). Compact fittings shall be ductile iron in accordance with ANSI A 21.53 (AWWA C-153) for 4" thru 24" sizes only. Note: mechanical joint wyes are not included in the AWWA C-153 specification. Pressure rating shall be not less than 200 psi unless otherwise specified. All ductile iron fittings shall have an interior coating of Protecto 401, or approved equal. Mechanical joint fittings shall be utilized on ductile iron mains and ductile iron laterals. Mechanical joint fittings shall not be utilized on PVC mains, unless otherwise approved by the Public Works Commission.

PVC Fittings:

PVC fittings shall be manufactured in accordance with ASTM D-3034, F-1336, and F-679. Molded fittings shall be utilized in sizes from 4" to 8" (or larger, if available). Fabricated fittings shall only be utilized with prior approval from the Public Works Commission. Fabricated fittings are defined as those fittings that are made from pipe or a combination of pipe and molded components. All PVC fittings shall contain identification markings as required by the applicable ASTM standard. All PVC fittings shall be gasketed joint, except as indicated for interior drop structures. Plastic fittings shall be as manufactured by GPK Products, Inc., Plasti-Trends, the Harrington Corporation (HARCO), or approved equal.

Ductile Iron Pipe Size x SDR26 Transition Adapter:

All ductile iron x PVC transition adapters shall be one (1) piece, bell x bell (gasket x gasket). Transition adapters shall range in size from four (4) inches through 12 inches. Transition adapters for pipe larger than 12-inches shall be as specified by the Public Works Commission. All transition adapters shall have a flow way tapered to allow a smooth transition between the ductile iron and PVC. Transition adapters shall be either PVC or ductile iron, in accordance with the following:

PVC – All PVC transition fittings shall be made from DR 18 C900 pipe stock. The C900 pipe stock shall meet the requirements of AWWA C900/C905, and have a minimum cell classification of 12454 as defined in ASTM D1784. The wall thickness shall meet or exceed DR 18. PVC transition fittings shall have SBR gaskets in accordance with ASTM F477. All six (6) inch and eight (8) inch adapters shall be molded. Molded fitting joints shall be 235 psi rated, in accordance with ASTM D3139, and shall have SBR rubber gaskets. Four (4) inch, ten (10) inch and 12 inch transition adapters shall have SBR Rieber style gaskets meeting ASTM F477. Joints shall be 235 psi rated, in accordance with ASTM D3139 for the C900 (ductile iron) bell, and in accordance with ASTM D3212 for the sewer (SDR26) bell. Molded C900 bell depths shall comply with AWWA C907. Fabricated (4-inch, 10-inch and 12-inch) bell depths and molded sewer (SDR26) bell depths shall be in accordance with ASTM F1336. PVC transition adapters shall be manufactured by the Harrington Corporation (HARCO), GPK Products, or approved equal.

Ductile iron – Ductile iron transition fittings shall be deep bell, push-on joint, and air test rated. The ductile iron material shall comply with ASTM A536, Grade 65-45-12 or 80-55-06. The bell depth shall be in accordance with ASTM F1336. Gaskets shall be of SBR rubber, in accordance with ASTM F477. Transition gaskets are not allowed. All ductile iron transition fittings shall have an interior coating of Protecto401 or approved equal. Ductile iron transition fittings shall be manufactured by the Harrington Corporation (HARCO) or approved equal.

Saddles:

Sewer service saddles may be utilized for sewer lateral installations. All sewer service saddles shall be ductile iron with stainless steel straps, bolts, nuts, and washers. The nuts shall be coated to prevent galling. The saddle body shall be ductile iron, in accordance with ASTM A536, Grade 65-45-12. The gasket material shall be SBR, in accordance with ASTM D2000. Saddles for PVC or DI laterals shall have an alignment flange. Sewer service saddles shall be as manufactured by Geneco, or approved equal. All stainless steel straps shall be pre-formed at the factory, to the specified outside diameters of the pipe.

SEWER LATERALS

Ductile iron laterals – For ductile iron mains, utilize mechanical joint fittings or an approved saddle with an alignment flange (Geneco or approved equal). For PVC mains, utilize an approved saddle with an alignment flange (Geneco or approved equal) or ductile iron fittings as specified above.

PVC laterals – utilize a saddle with an alignment flange (Geneco or approved equal) on PVC or ductile iron mains; utilize a mechanical joint tee with SDR 35 transition gaskets on ductile iron mains; or utilize PVC fittings as specified above on PVC mains.

The following table summarizes the materials to be utilized for sewer main to lateral connections:

	PVC Main	DI Main
DI Lateral	DI fitting or approved saddle	MJ fitting or approved saddle
PVC Lateral	PVC fitting or approved saddle	MJ fitting with transition gasket or approved saddle

Sewer laterals shall be in accordance with these Specifications and PWC standard details S.10, S.11, and S.12.

PRECAST CONCRETE MANHOLES

Pre-cast circular reinforced concrete manhole units shall be in accordance with ASTM C-478. The tongue and groove ends of the manhole sections shall be manufactured for jointing with rubber gaskets (i.e., con-seal). An eccentric cone shall be utilized on all manholes, unless otherwise approved by the Public Works Commission.

Manhole steps shall be placed in all manholes and shall be steel reinforced ($\frac{1}{2}$ " grade 60) copolymer polypropylene plastic steps in accordance with ASTM C-478 for material and design. The steps shall be spaced 16" on center with serrated treads and wide enough to stand on with both feet.

Manhole frames and covers shall be made of gray cast-iron, and the iron shall possess a tensile strength of not less than 18,000 psi. Cast iron shall conform to ASTM Specification A 48-83 Class 35. The frame and cover shall be manufactured by the same manufacturer. All castings shall be in accordance with Public Works Commission standard details. Any defective castings shall be removed and replaced.

Any special linings and coatings that are specified for a manhole and installed at the production facility, in the field, or during repairs, shall be applied in accordance with the applicable special coatings specification and the manufacturer's specifications for that material.

Camlock ring and covers shall be in accordance with Public Works Commission standard details. Camlock bolt head shall be compatible with PWC standard tool for turning camlock mechanism. Camlock ring and covers shall be installed as indicated on the drawings, in accordance with PWC standard details.

SELECT BEDDING MATERIAL

Select bedding material shall be crushed stone (No. 57 or No. 5), in accordance with Public Works Commission standard details. Bedding material shall be provided for all pipe materials.

INSTALLATION

Pipe installation shall be in strict accordance with Specification Section 02222 – Excavation and Backfilling for Utility Systems and as outlined herein.

PIPE LAYING

Pipe installation shall be in accordance with the manufacturer's instructions. Proper equipment shall be utilized to perform the work in a manner satisfactory to PWC. All pipes and fittings shall be carefully lowered into the trench in such a manner to prevent damage to the protective coatings and linings. Under no circumstances shall pipe materials be dropped or dumped into the trench. Pipe shall be carried into position and not dragged.

All dust, dirt, oil, tar (other than standard coating), or other foreign matter shall be cleaned from the jointing surfaces, and the gasket, bell, and spigot shall be lubricated with lubricant recommended by the manufacturer.

The pipe shall be laid upgrade, beginning at the lower end with the tongue or spigot ends pointing in the direction of the flow to the correct line and grade, unless otherwise approved by PWC. The pipe section to be installed shall be aligned by batter board or laser beam with the last installed pipe section. Mechanical equipment should not be used to assemble the pipe. Pipe shall be assembled in accordance with the pipe manufacturer's instructions. Any damage resulting from the use of mechanical equipment shall be replaced as directed by PWC.

Adjustments in grade by exerting force on the barrel of the pipe with excavating equipment shall not be allowed. The Contractor shall verify line and grade after assembling each joint.

At any time when pipe laying is not in progress, the open ends of the pipe shall be closed by a water tight plug or other means approved by the PWC Project Coordinator. If water is in the trench, the plug shall remain in place until the trench is pumped completely dry. No pipe shall be laid in water or where in the PWC Project Engineer's and/or PWC Project Coordinator's opinion trench conditions are unsuitable. Every precaution shall be taken to prevent material from entering the pipe while it is being installed.

ALIGNMENT AND GRADE

All pipe shall be installed to the required lines and grades. Structures shall be installed at the required locations. The lines and grades of the pipe will generally be indicated by stakes parallel to the line of the pipe. The Contractor shall be responsible for installing the pipe to proper line and grade.

Pipe shall be visually inspected by shining a light between structures and /or by closed circuit television inspection. Any defects discovered, including poor alignment, shall be corrected as directed by the Public Works Commission.

The bottom of the trench shall be excavated to a minimum of four inches (4") below the outside bottom of the pipe being installed to allow adequate placement and compaction of bedding material prior to installation.

Select bedding material shall be placed a minimum of four inches (4") and a maximum of six inches (6") under the pipe for full width of the trench and halfway up the pipe on the sides. Bedding material shall be placed in layers not exceeding six inches (6") loose thickness for compacting by vibratory mechanical tamps under the haunches and concurrently on each side of the pipe for the full width of the trench. The final result shall be "Class B" bedding for rigid pipe. If the existing material under the pipe bedding

material is unsuitable, the unsuitable material shall be removed and replaced with select bedding material (No. 57 or No. 5 stone), as authorized and approved by the Public Works Commission Project Coordinator.

The same material pipe shall be utilized from manhole to manhole, unless otherwise approved by PWC. If the section of pipe between manholes is 250 feet or less, no transitions will be allowed (either all PVC or all ductile iron). Should the length between manholes exceed 250 feet, only one transition will be allowed. Use of a C900 x SDR 26 adaptor shall be used to accomplish the transition. A transition is defined as the use of one C900 x SDR26 adaptor. No more than one (1) adaptor shall be utilized in any given manhole to manhole segment.

All manholes shall be constructed to Public Works Commission's standards. Installation shall be in accordance with ASTM C-891 and PWC standards.

Manholes shall be constructed of precast reinforced concrete circular sections installed on a base riser section with integral floor and shall be cored to accommodate the various pipe connections, as indicated on the drawings. Pipe connections to a manhole shall be by gasketed flexible watertight connections (boot for small diameter and A Loc for larger diameter pipe) or as approved by the Public Works Commission. The manhole size shall be in accordance with the following table, unless otherwise specified:

<u>Pipe Size</u>	<u>Manhole Diameter **</u>
24" and less	48" *
27" - 36"	60"
42"	72"

* Where interior drop structures are required, use 60" diameter as required in the Public Works Commission standard details.

** Where multiple connections or acute angles are required, larger diameter manhole may be required as indicated on the plans.

The invert channel shall be constructed of brick and mortar, in accordance with Public Works Commission standard details. **Precast inverts are not allowed.** The invert channel shall be smooth and semicircular in shape conforming to the inside of the connecting sewer section. Changes in direction of flow shall be made with a smooth curve as large as a radius as the size of the manhole will permit without a decrease in flow velocity. Changes in size and grade of the channel shall be made gradually and evenly. The invert channel walls shall be constructed to three quarters (3/4) of the height of the crown of the outlet sewer and in such a manner not to obstruct maintenance, inspection or flow in the sewers. The inverts shall have a minimum slope of one (1) percent across the bottom of the manhole. A shelf shall be provided on each side of any manhole invert channel. Inverts in manholes with standing water will not be acceptable. The shelf shall be sloped not less than 1:12 (min) and no more than 2:12 (max). The bottom of the boot for the new sewer main or lateral shall be set one inch above existing shelf unless otherwise indicated.

When used in a paved street, the ring and cover shall be set in suitable mortar surrounded by a concrete collar in accordance with Public Works Commission standard details. When used in places other than in a paved street, the ring and cover shall be set to the grade shown on the plans or directed by the Public Works Commission. In unpaved areas cam-lock ring and cover shall be used. Camlock ring and cover shall be installed in accordance with Public Works Commission standard details.

The interior manhole riser joints, lift holes and grade adjustment rings shall be sealed with non-shrinking mortar to provide a watertight manhole. Lift holes sealed by the manufacturer with plastic caps do not require mortar seal. The hardened mortar shall be smooth to rub with no sharp edges. Use of grade rings with cam-lock ring and cover are not allowed, unless approved by the PWC Project Coordinator. **Use of grade rings is not allowed for above grade adjustments.**

All exterior manhole riser joints, including the joint at the cone, shall be sealed with an external rubber sleeve. The sleeve shall be made of stretchable, self-shrinking rubber, with a minimum thickness of 30 mils. The back side of each wrap shall be coated with a cross-linked reinforced butyl adhesive. The butyl adhesive shall be a non-hardening sealant, with a minimum thickness of 30 mils. The seal shall be designed to stretch around the manhole joint and then overlap to create a fused bond between the rubber and butyl adhesive. The application shall form a continuous rubber seal for the life of the application. The sealing system shall be as manufactured by Concrete Sealants, Inc. (Con-Seal), Sealing Systems, Inc., or approved equal. The wrap shall be a minimum of six (6) inches in width, and shall be centered on the joint. All manhole joints (including the cone section to the last riser) shall be wrapped and sealed. Care shall be taken to prevent damage to the wrap during backfill operations. The manhole surface shall be prepared in accordance with manufacturer's specifications, prior to installing the joint wrap.

Materials shall not enter the sewer line during construction of the manhole. The manhole shall be kept clean of any and all debris or materials. Any debris or material that entered the manhole shall be immediately removed. This condition shall be maintained until final acceptance of the work.

CONNECTION TO EXISTING MANHOLES OR LIFT STATIONS

All connections to existing manholes and/or lift stations shall be approved by the Public Works Commission. Where new mains are to be connected to existing active sanitary sewers, the active sewers shall remain in service. Unless otherwise indicated, where new lines are connected into existing manholes, all or such portion of the manhole invert as is necessary shall be removed and a new invert shall be constructed to accommodate both new and existing flows. All work shall conform to the requirements specified for new manholes. The existing structure connection shall be cored and a flexible watertight connection (i.e., boot) installed. The boot shall be installed in accordance with Public Works Commission standard details and requirements. The Contractor shall coordinate and cooperate with the Public Works Commission's Project Coordinator.

PIPE TO MANHOLE CONNECTOR (BOOT)

A watertight, flexible pipe-to-manhole connector shall be utilized on all pipe to manhole connections, for both new and existing manholes and pipes, unless otherwise specifically authorized in writing by the Public Works Commission.

The connector assembly shall be the sole element to provide a watertight seal of the pipe to the manhole or other structure. The connector shall consist of a rubber gasket, an internal compression sleeve, and one or more external take-up clamps. The connector shall consist of natural or synthetic rubber and Series 300 non-magnetic stainless steel. No plastic components shall be allowed.

The rubber gasket shall be constructed of synthetic or natural rubber, and shall meet or exceed the requirements of ASTM C-923. The connector shall have a minimum tensile strength of 1,600 psi. The minimum cross-sectional thickness shall be 0.275 inches.

The internal expansion sleeve shall be comprised of Series 300 non-magnetic stainless steel. No welds shall be utilized in its construction.

Installation of the connector shall be performed utilizing a calibrated installation tool furnished by the connector manufacturer. Installation shall require no re-tightening after the initial installation. Installation shall be done in accordance with the manufacturer's instructions.

The external compression take-up clamps shall be Series 300 non-magnetic stainless steel. No welds shall be utilized in its construction. The clamps shall be installed utilizing a torque-setting wrench furnished by the connector manufacturer. Installation shall be done in accordance with the manufacturer's instructions.

The Contractor shall utilize the proper size connector in accordance with the connector manufacturer's recommendations. All dead-end pipe stubs shall be restrained in accordance with ASTM C-923.

The finished connection shall provide a sealing to a minimum of 13 psi, and shall accommodate a minimum pipe deflection of seven (7) degrees without the loss of seal.

The pipe to manhole connector shall be PSX: Direct Drive as manufactured by Press-Seal, or approved equal.

INSIDE DROP MANHOLE STRUCTURE

Inside manhole drop structures shall be constructed and installed in accordance with Public Works Commission standard details.

CLEANING

Prior to final inspection, all sanitary sewer laterals, mains, and manholes newly installed on the collection system shall be flushed and cleaned. During the flushing operation, the downstream manhole shall be closed with a watertight plug to protect the existing sewer main. All water and debris shall be removed and properly disposed of by the Contractor. This condition shall be maintained until the Public Works Commission issues final acceptance for the project.

TESTING

Completed sewers shall be tested in accordance with the provisions outlined below. The Contractor shall furnish all equipment, labor, materials, and pay all costs associated with the tests performed. The Contractor shall schedule all testing with the Public Works Commission's Project Coordinator, a minimum of 48 hours in advance. The Contractor shall cooperate with the Public Works Commission's Project Coordinator and furnish any needed assistance necessary to complete the required testing.

For annexation and/or retrofit projects: No testing shall be conducted prior to successful completion of the compaction testing.

For all other projects: No testing shall be completed until all utilities are installed, prior to preparation of the road subgrade. The Contractor may elect to perform testing to satisfy them that the sewer utility is installed properly prior to commencing installation of other utilities. However, such testing shall not be construed as acceptance by PWC.

The deflection/mandrel test shall not be performed until a minimum of thirty (30) calendar days after backfill operations are completed and the area graded to final contours. In lieu of waiting thirty (30) calendar days, the Contractor has the option to have an independent testing laboratory verify that compaction has been completed to achieve the maximum density as shown in the detail. The location and elevation of the compaction testing shall be determined reviewed and approved by the Public Works Commission's Project Coordinator. The Contractor shall provide the Public Works Commission with a copy of the density testing results.

Compaction testing shall be done in accordance with Specification Section 02222 – Excavation and Backfilling for Utility Systems.

Vacuum Testing Manholes:

All precast sanitary sewer manholes installed by the Contractor shall be vacuum tested for leakage. This test shall be done in accordance with ASTM C-1244 and in the presence of a Public Works Commission Project Coordinator. The Contractor shall be responsible for providing all the necessary labor, materials, equipment, testing apparatus, and all other incidentals necessary to complete the vacuum test. All testing equipment utilized shall be approved for use in vacuum testing manholes.

Each manhole shall be tested after assembly. All lift holes shall be plugged with an approved non-shrink grout. All lines, including laterals, entering the manhole shall be temporarily plugged. The Contractor should take care to ensure that the pipes and plugs are secure in place to prevent them being drawn into the manhole. The test head shall be placed directly on top of the concrete surface of the manhole following the manufacturer's recommendations, rather than to the cast iron seating ring.

Manholes may be tested either prior to backfill or post backfill at the contractor's option. For pre-backfill testing, a vacuum of 10 inches of Mercury (inches Hg) shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop to 9 inches of Mercury (inches Hg). The manhole is acceptable if the time for the vacuum reading to drop from 10 inches of Mercury to 9 inches of Mercury meets or exceeds the values indicated below:

<u>Manhole Depth</u>	<u>Diameter of Manhole</u>		
	<u>4' Diameter</u>	<u>5' Diameter</u>	<u>6' Diameter</u>
10' or less	25 sec	33 sec	41 sec
11' to 15'	38 sec	49 sec	62 sec
16' to 20'	50 sec	65 sec	81 sec
21' to 25'	62 sec	82 sec	101 sec
25' to 30'	74 sec	98 sec	121 sec

Vacuum testing backfilled manholes is not recommended in the presence of groundwater. Vacuum testing a backfilled manhole that is subjected to hydrostatic pressure may exceed the design limits of the flexible connectors and could lead to failure of the structure, joints, and/or connectors. Where groundwater is present a reduction in the vacuum pressure applied to the manhole will be required. The vacuum shall be reduced by 1 inch of Mercury for every 1 foot of hydrostatic head between 12 feet and

21 feet. A vacuum test should not be performed when the hydrostatic head exceeds 22 feet. See the chart below:

Hydrostatic Head (ft)*	12	13	14	15	16	17	18	19	20	21	22
Vacuum Pressure (in Hg)	10	9	8	7	6	5	4	3	2	1	**

*Hydrostatic head above the critical connector (critical connector is bottom most flexible connector)

**Do not perform vacuum test

If the manhole fails the initial test, the manhole shall be repaired by an approved method until a satisfactory test is obtained. All repair methods shall be approved by the Public Works Commission prior to being utilized. Retesting shall be performed until a satisfactory test is accomplished.

Mandrel Testing:

Deflection tests shall be performed on all PVC pipe installations. PVC pipe's maximum deflection after backfilling shall not exceed five (5) percent. The rigid ball or mandrel used for the deflection test shall have a diameter not less than 95 percent of the base inside diameter or average inside diameter of the pipe depending on the type of pipe manufactured and the applicable ASTM Standard. The PVC pipe shall be measured in compliance with ASTM D2122 "Standard Test Method of Determining Dimensions of Thermoplastic Pipe and Fittings". The Contractor shall supply all labor, equipment and materials necessary to perform the test in the presence of the Public Works Commission's Project Coordinator. The test shall be performed without mechanical pulling devices. The mandrel shall be constructed so as to preclude any yield in diameter, and with a pull line on each end to facilitate withdrawal. If the deflection exceeds the allowable, the Contractor shall remove and replace the pipe.

Air Testing:

Air testing shall be performed on all mains and laterals to determine acceptability. The length of sewer subject to an air test shall be the distance between two adjacent manholes. The tests shall be conducted in accordance with the appropriate ASTM standard. The air test shall be coordinated with the Public Works Commission. The Contractor is required to supply all equipment, labor, materials and pay all costs associated with the test performed.

Air Test for PVC Pipe

The low pressure air test on PVC pipe shall be performed with satisfactory results in accordance with ASTM F1417 "Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air". The pipe, including lateral assemblies, shall be plugged and air added slowly until the internal pressure of the line is raised to 4.0 psi. After the pressure of 4.0 psi is obtained, regulate the air-supply so that the pressure is maintained between 3.5 and 4.0 psi for at least two (2) minutes, depending on air/ground temperature conditions. The pressure will drop slightly until equilibrium is obtained; however, a minimum of 3.5 psi is required. Once the 3.5 psi is maintained, the test will begin. If the pressure drops 1.0 psi within the time indicated below, the test fails.

Pipe Dia (in)	Minimum time (minutes)	Length for Min Time (ft)	Time for Longer Length (sec)
4	3:46	597	0.380L
6	5:40	398	0.854L
8	7:34	298	1.520L
10	9:26	239	2.374L
12	11:20	199	3.418L

15	14:10	159	5.342L
18	17:00	133	7.692L
21	19:50	114	10.470L
24	22:40	99	13.674L
27	25:30	88	17.306L
30	28:20	80	21.366L
33	31:10	72	25.852L
36	34:00	66	30.768L

The Contractor shall observe all safety precautions to include allowing no one in the manholes during testing, securing all plugs and providing additional plug bracing. The Contractor shall be required to furnish, install and remove after testing at no additional cost, a temporary glue cap/plug to be airtight for all cleanout stacks to accomplish air testing. The air pressure shall never exceed 8 psi. All gauges shall be accessible outside of the manholes.

HYDROSTATIC TESTS

After the ductile iron sewer pipe has been laid within the "protected" area and backfilled to finished grade, the pipe shall be subjected to a hydrostatic pressure test. All laterals within the "protected" area shall be ductile iron. All sewers subject to hydrostatic testing shall include (1) sewers entering or crossing streams, (2) sewers located less than 100 feet from any public or private water supply source including any WS-I waters or Class I or Class II impounded reservoirs, (3) where the minimum 18 inch vertical and 10 feet horizontal separation cannot be maintained between sewers and water mains (see NC DENR Regulations), or (4) as specified and/or indicated on the drawings. The Contractor will furnish all labor and material, including test pumps, plugs, and all other incidentals for making hydrostatic tests. Hydrostatic pressure testing shall be conducted on the completed main, including the laterals.

The duration of the pressure test shall be at least one hour or longer, as directed by the Public Works Commission. The hydrostatic pressure shall be 150 psi. Each section of pipe shall be slowly filled with water and the specified test pressure based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Public Works Commission. Before applying the specified test pressure, all air shall be expelled from the pipe.

All joints showing visible leaks shall be made tight. Cracked or defective pipe, joints, laterals, and fittings discovered in consequence of the pressure test shall be removed and replaced with sound material, and the test shall be repeated until the test results are satisfactory. The requirement for the joints to remain exposed for the hydrostatic test may be waived by the Public Works Commission in certain situations. The test shall be repeated until satisfactory to the Public Works Commission.

The results of the pressure tests shall be satisfactory as specified. All replacement, repair, or retesting shall be accomplished by the Contractor. All repairs shall be reviewed and approved by the Public Works Commission prior to backfill. The use of couplings, sleeves, etc. shall be reviewed and approved by the Public Works Commission prior to use.

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DIVISION 2

SITE WORK

02931 SOD

GENERAL

Restoration of existing lawn areas outside of the public right-of-way disturbed by construction activities shall be by installation of new sod. Restoration and sod shall be performed as soon as practical, but the time period between initial disturbance, the utility installation and sod placement shall not exceed 60 days. Sod is defined as blocks, squares, strips of turf grass and adhering soil used for vegetative planting. Sodding and preparation of the sod bed shall be performed by an experienced landscape subcontractor specializing in this type of operation unless otherwise approved by the Public Works Commission in writing.

The Contractor shall adhere to the standards set forth by the American Association of Nurseryman and the Associated Landscape Contractors of America. All personnel shall be appropriately trained with regard to the degree of involvement so to assure the Owner the highest level of workmanship. Sod species suitable in this area are hybrid bermuda, centipede and zoysia; however the sod placed for each individual's lawn shall be the same species of sod as existing. Sodding may be performed at any time of the year except frozen sod shall not be placed nor shall sod be placed on frozen ground. The Contractor shall adapt his operations to variations in weather or soil conditions as necessary for the successful establishment and growth of a vigorous, disease free and weed free sod lawn.

MATERIAL

Materials, equipment and products incorporated in the work shall be approved by the Public Works Commission. The Contractor shall submit a list of the proposed materials with samples, if required. Package materials should be delivered in unopened original containers showing weight, analysis and name of manufacturer. The Contractor shall protect the material from deterioration and/or damage

Sod shall contain 95 percent permanent grass; not more than five (5) percent weeds and undesirable grasses, good texture and free from obnoxious grasses, roots, stones and foreign materials. Sod shall be uniformly 1 ½ to 2 inches thick with a well developed fibrous root mat system in topsoil with clean cut edges. The sod shall be sufficiently dense and cut to the minimum required thickness such that if the sod is suspended by one corner, the sod will not tear apart. The sod shall be recently mowed to a height of not more than three (3) inches prior to harvest. The sod shall be supplied and maintained in a healthy condition as evidence by the grass being a normal green color in appearance, dense, and free from insects, pests, disease or injury. Sod shall be delivered to the job site within 24 hours after being cut and shall be installed within 24 hours after delivery. Any sod which is torn, broken or too dry will be rejected.

SOIL BED PREPARATION

Before landscape construction is to begin, the site shall be cleaned and disposed of brush,

rubbish, stones, gravel and other foreign material within the area to be landscaped. Exposed ground surfaces disturbed during construction activities shall be graded to the original contours (allowing for the thickness of the sod) or as in the case of an altered contour such as a fill slope, graded as directed by the Public Works Commission to finish grade, or typical cross section. The sod bed shall be excavated to such a depth that after sod placement the top of the sod shall be flush with surrounding grade or contours. Rake areas to be sodded smooth, free from unsightly variations, bumps, ridges or depressions. Do not start work until conditions are satisfactory and do not work during inclement or impending inclement weather.

The surface area to receive sod shall contain a minimum of four (4) inches of good, fertile, friable, organic natural topsoil loam as a base for laying the sod. Topsoil shall be free of clumps, brush, sticks, weeds, stones, roots, trash or other objectionable material. Contractor shall insure all topsoil to be free of plants or plant parts of quackgrass, johnson grass, nut sedge, poison ivy or other noxious weeds. The Contractor shall furnish and supplement the existing topsoil at no additional costs to the Public Works Commission providing a minimum four (4) inch thickness as specified. Soil preparation shall not be performed in frozen or extremely wet conditions. The finished topsoil bed shall be uniform in grade, with a yard like appearance. All changes in grade shall have a smooth, rounded peaks and valleys.

The soil shall be scarified or otherwise loosened to a depth of not less than five (5) inches and all clods shall be broken. The top four (4) inches shall be worked into an acceptable smooth, friable and uniformly fine texture sod bed by use of soil pulverizes, drags, harrows or by other methods approved by the Public Works Commission. Commercial grade fertilizer (8% nitrogen, 8% phosphate, 8% potash) shall be applied at a rate of 20 pounds per 100 square feet, super-phosphate at 12 pounds per 1,000 square feet and lime (dolomite limestone containing not less than 85% total carbamates) shall be applied at a rate of 25 pounds per 1,000 square feet or at a rate recommended for the type of sod being placed. Apply soil amendments within 24 hours after raking topsoil base surface and not more than 48 hours prior to laying sod. Mix thoroughly a minimum depth into the upper four (4) inches of topsoil and lightly water to aid in dissipation. Sod placement shall not begin until the soil preparation is inspected and approved by the Public Works Commission. During application of soil amendment fertilizer etc., adequate precautions shall be taken to prevent damage to existing features such as traffic, structures, landscape, trees, vegetation, utilities or any other appurtenances. The Contractor shall be required to repair or clean any damages.

PLACING SOD

The Contractor and his landscape subcontractor shall coordinate the placing of the sod to begin within 24 hours after the topsoil base preparation is completed and accepted by the Public Works Commission. Sod shall be brought to the site as near to the time of placing as possible. Store sod in the shade, and keep watered particularly in extreme hot and dry condition to insure vitality and to prevent the dropping off of soil during handling. During wet weather, the sod shall be allowed to dry sufficiently to prevent tearing. Handling shall be done in a manner which will prevent tearing, breaking, drying or other damage. Carefully place sod in rows with the longer side perpendicular to slopes and the ends staggered in each successive row in a brick-like pattern. Butt the ends and sides together tightly and do not overlap or stretch the sod. Do not leave any voids or gaps. Unavoidable gaps shall be closed with small pieces of torn or broken sod if kept

moist and approved by the Public Works Commission. After the sod is laid, irrigate thoroughly to allow water to penetrate a minimum six (6) inches into the soil below the sod. Sod shall not be placed when the atmospheric temperature is below 32oF.

Tamp and roll completed sod installation with a manual roller or approved equipment to eliminate minor irregularities and to form close contact with the soil bed immediately after placing and watering. The type of rolling and tamping equipment to be used shall be submitted to the Public Works Commission for approval prior to construction. On steep slopes 3:1 (horizontal and vertical) or greater, in drainage ditches or any areas where sod slipping may occur, anchor sod with approved wooden stakes ($\frac{1}{2}$ "x $\frac{3}{4}$ " x 12") or staples spaced not over two (2) feet apart in any direction and/or in sufficient number to prevent slippage or displacement. The anchors shall be driven flush with the surface of the sod. The wide flat side of the stake shall be driven parallel to the slope. Staking shall be done concurrently with sod placement and prior to tamping. Sod shall be laid with the long horizontal edge of the strips parallel to the contour starting at the bottom of the slope. The edge of the sod shall be turned slightly in the ground at the top of a slope and a layer of earth placed over it and compacted so as to conduct the surface water over and onto the top of the sod. Upon completion of the above described work, the surface of the sodded areas shall coincide with the finished grade and not exceed $\frac{1}{4}$ " plus or minus variation to adjoining grade or proposed contour. Extreme care shall be taken to prevent the installed sod from being torn or displaced.

MAINTENANCE

The Contractor shall, at no additional cost to the Public Works Commission, make whatever arrangements necessary to supply water of suitable quality and purity to sustain and encourage vigorous plant growth, and supply all equipment for proper delivery and application to planted areas. Water obtained from a PWC fire hydrant shall be metered and properly protected with an approved backflow prevention device. PWC must inspect and approve any connections to their water system to include the proposed water application and storage equipment. The Contractor shall not use private resident's water. The Contractor is solely responsible to provide watering of the sod. The method of application of water shall be approved by the Public Works Commission. Limit watering to early morning or late afternoon to enable to soil the absorb maximum amount of water.

Maintenance shall begin immediately after sodding operation. The Contractor shall maintain all sodded areas until sod is firmly established and as outlined below. Maintenance will include watering, fertilizer, pest control, soil amendments, disease control, erosion repair, mowing, protecting turf area from traffic (i.e. temporary fences, barriers, signs, etc.) and replacement of any dead or damaged sod.

Watering

- Water lawn areas once a day with a minimum $\frac{1}{2}$ inch water for the first three (3) weeks after area sodded.
- After the three (3) week period, water twice a week with a $\frac{3}{4}$ inch of water each time unless a comparable amount of rainfall has occurred.

- Make weekly inspections to determine moisture content of soil and supplement the above watering schedule as needed.
- Excessive runoff puddling and wilting shall be prevented.

Fertilizer and Pest Control

- Evenly spread fertilizer composite at a rate of 40 pounds per 5,000 square feet or as recommended by the manufacturer. Fertilizer shall not be applied until two (2) weeks after initial placement of the sod or prior to the advent of winter dormancy.
- Treat areas of weed and insect infestation as recommended by the treatment manufacturer.

Mowing

- The Contractor shall do mowing operations, (in yards not being mowed by residents) until provisional acceptance.
- Mowing shall be done only when the grass is dry with a rotary type mower having a blade height set not lower than one and one half (1½) inches nor higher than three (3) inches.
- Mowing operations shall be conducted at intervals, which ensure grass height does not exceed four (4) inches between mowing.
- The Contractor shall complete at least one mowing operation before the work will be considered for acceptance.

The Contractor shall protect and not allow access of vehicular traffic into any newly sodded areas and shall repair any damaged turf to original grade. Maintenance shall continue for a period of 90 days after placement or until provisional acceptance by the Public Works Commission. A written record shall be furnished to the Owner of the maintenance work performed. At least two weeks shall elapse after chemical control is applied before a request of inspection.

ACCEPTANCE

Fifteen (15) days prior to the end of the 90 day maintenance period, the Contractor shall make a written request to the Public Works Commission for an inspection and provisional acceptance of the sod. Failure to notify the Public Works Commission will not relieve the Contractor of the maintenance provisions required and the Contractor will continue to be responsible for the maintenance of the sod.

Replacement of dead sod shall be performed within seven (7) days after notification by the Public Works Commission and the maintenance period for these areas or individual lawns shall be extended for the 90 day maintenance period. Failure to replace dead sod within the specified seven (7) day period will result in the Public Works Commission having the work performed and deducting the cost from the Contract; however, the Contractor shall be responsible for the maintenance.

Final acceptance will be given upon satisfactory contract performance exhibited at final inspection and acceptance. Sodded areas are to be fully rooted prior to acceptance. The Owner shall be the sole judge as to whether or not the lawns are acceptable. Should any deficiencies be disclosed at final inspection, the Contractor shall make the necessary corrections in a timely

manner and request re-inspection.

GUARANTEE

The Contractor shall guarantee a dense, vigorous stand of turf free of weeds, disease, pests or any dead areas more than one half of a square foot in size for a period of 90 days from initial placement or replacement whichever is greater. Total dead area shall not exceed one percent (1%) of total square footage for each individual resident's lawn.

DIVISION 2

SITE WORK

02933 LAWNS AND GRASSES (SEEDING)

GENERAL

All exposed ground surfaces that have been disturbed during construction shall be graded to original contours as practicable, shaped to drain, and free of trash and debris. Grassing shall be accomplished as soon as practicable after sections of work are completed. Seeding and/or planting shall be performed by an experienced subcontractor specializing in this type of operation, unless otherwise approved by the Public Works Commission in writing. Disturbed sections shall not exceed one mile, without prior approval by the Public Works Commission. Grassing shall be in accordance with the Contract Documents.

PREPARATION OF THE SOIL

The surface area to receive seed shall contain a minimum of four (4) inches of good, fertile, friable, organic natural topsoil loam as a base for spreading the seed. Topsoil shall be free of clumps, brush, sticks, weeds, stones, roots, trash or other objectionable material. Contractor shall insure all topsoil to be free of plants or plant parts of quackgrass, johnson grass, nut sedge, poison ivy or other noxious weeds. The Contractor shall furnish and supplement the existing topsoil at no additional costs to the Public Works Commission providing a minimum 4 inch thickness as specified. Soil preparation shall not be performed in frozen or extremely wet conditions. The finished topsoil bed shall be uniform in grade, with a yard like appearance. All changes in grade shall have a smooth, rounded peaks and valleys.

The topsoil shall be loosened and mixed to the depth of four inches (4"). Suitable equipment (cultipackers, harrows, drags) meeting the approval of the Public Works Commission shall be used. This operation shall be accomplished by cutting on one (1) foot centers parallel to the contour of the slopes. On slopes that are steeper than 2:1, both depth preparation and degree of smoothness may be reduced, if approved by the Public Works Commission, but in all cases the slope surface shall be scarified groove, trenched or punctured so as to provide a textural plane of cut forming pockets, ridges, or trenches in which seeding material can lodge. Soil preparation shall not be performed when the soil is frozen, extremely wet or in an otherwise unfavorable working condition. The soil shall be free of any substance that might inhibit plant growth. Assistance of the local agricultural agent is recommended.

Lime shall be applied at the rate of 1/2 tons per acre. 10-20-20 commercial fertilizer shall be applied at the rate of 1,000 pounds per acre and well worked in to the top four inches (4") of top soil. If hydroseeding, use 500 pounds of 10-10-10 fertilizer on slopes steeper than 1/2 horizontal to 1 vertical.

SEED MIXTURE AND SOWING THE SEED

Seed shall be seed certified to be the latest season's crop and shall be delivered in original sealed

packages bearing the producer's guaranteed analysis for percentages of mixtures and pure live seed. The producer's seed label shall indicate it the minimum percent of pure live seed (which shall be 82.45 for Bermuda, 88 for Rye Grain), the minimum percent of germination in hard seed and maximum percent of weed seed (no more than 1 percent for Bermuda, 0.5 percent for Rye Grain). Seed shall be labeled in conformance with U.S. Department of Agriculture rules and regulations under the Federal Seed Act and applicable State seed laws. Seed that has become wet, moldy, or otherwise damaged will not be acceptable.

The following seed mixture shall be used:

<u>POUNDS OF SEED PER ACRE</u>				
	K-31 Fescue	Grain Rye	Common Bermuda	Centipede
April 15 - Sept. 1	75	-	60 (hulled)	5
Aug. 15 - Nov. 15	120	-	25 (hulled)	5
Nov. 1 - April 1	120	120	25 (un-hulled)	5

Note: If there are differences in the seed mixture between the mixture stated in these specifications and that which is specified as part of an approved Erosion Control Plan, the seed mixture specified in the erosion control plan shall take precedence.

Where construction crosses a pasture that has been grassed, the Contractor shall re-seed the area with the same type of grass as found on the site. All highway rights-of-way, and private yards disturbed shall also be re-seeded or with the same type of grass previously found. The seed mixture specification shall be used as a guide and the Contractor is charged with the responsibility of seeding areas with the proper type of grass that matches the existing.

Seed shall be broadcast uniformly by hand or by approved sowing equipment. One half of the seed shall be sown in one direction and the remaining shall be sown at right angles to the first. Do not seed when the wind velocity exceeds five (5) miles per hour. Rake lightly into top 1/8 inch of the soil prior to compacting, with a roller not exceeding 100 pounds.

All seeded areas will be mulched with two (2) tons per acre of small grain straw or wood cellulose fiber spread uniformly, approximately 1/4 of ground should be visible to avoid smothering seedlings. Asphalt emulsion (ASTM D-977 and ASTM D-2028) shall be used to anchor the straw applied at 150 gallons per ton of straw, or crimped to stabilize. Asphalt emulsion shall be required from November 1st to March 31st. The Contractor shall take sufficient precautions to prevent mulch from entering drainage structures through displacement by wind, water or other causes and promptly remove any blockage which may occur.

SPECIAL CONSIDERATIONS

Shrubbery shall be expertly removed and carefully preserved for replanting, unless otherwise directed by the Public Works Commission adequate earth ball shall be removed to guard against

damage to the root system. Shrubbery shall be replanted only after all construction is complete. The excavation made for replanting shall be six inches (6") larger in every dimension than the root ball removed. This additional space shall be filled with a mixture of one half topsoil and one half peat moss. Care shall be taken to set the top of the ball slightly above or flush with the surrounding surface. Any shrubbery damaged or that dies shall be replaced with an equal or better plant material at the Contractor's expense.

MAINTENANCE

The Contractor shall protect and maintain grassed areas as necessary to establish a uniform turf composed of the grasses specified. The Contractor shall re-seed any bare areas and repair all eroded areas.

Watering of seeded areas will be required during periods of dry weather to promote maximum growth. The Contractor shall supplement natural rainfall to insure a minimum of one (1) inch of rainfall weekly.

Maintenance of lawns begins immediately after the area is planted and continues for the period required to establish acceptable lawns, but not less than sixty (60) days after initial seeding, or until provisional acceptance by Owner. Maintain seeded areas by watering, fertilizing, mowing, weeding and other operations such as rolling, re-grading, replanting, aerating, and mulching as required to establish an acceptable lawn free of eroded or bare areas.

ACCEPTANCE

Fifteen (15) days prior to the end of the sixty (60) day maintenance period, the Contractor shall make a written request to the Owner for an inspection and provisional acceptance of the seeded area. Failure to notify the Owner will not relieve the Contractor of the maintenance provisions required and the Contractor will continue to be responsible for the maintenance of the seeded area.

Replacement of dead seed area(s) shall be performed within seven (7) days after notification by the Public Works Commission and the maintenance period for these areas or individual lawns shall be extended for an additional sixty (60) day maintenance period. Failure to replace seeded area(s) within the specified seven (7) day period will result in the Owner having the work performed and deducting the cost from the Contract; however, the Contractor shall be responsible for the maintenance.

Final acceptance will be given upon satisfactory contract performance exhibited at final inspection and acceptance. Seeded areas are to be fully rooted prior to acceptance. The Owner shall be the sole judge as to whether or not the lawns are acceptable. Should any deficiencies be disclosed at final inspection, the Contractor shall make the necessary corrections in a timely manner and request re-inspection.

Payment to the Contractor for seeding areas will be approved once the seed has been established and meets the requirements of this paragraph of this specification.

GUARANTEE

The Contractor shall guarantee a stand of turf is considered acceptable when a live vigorous stand of permanent grass is established with growing sprouts visible at the surface showing not less than 9 seedlings of permanent grass at least 2 inches long in each square foot, and where no gaps larger than 4 inches in diameter occur anywhere in the lawn area. Permanent grass is defined as Common Bermuda, Centipede, and Fescue.

PART 1 GENERAL

1.01 SCOPE

This specification covers polymer concrete manholes intended for use in sanitary sewer systems where corrosion resistance is required.

1.02 RELATED SECTIONS

- A. Section 02222 – Excavation, Trenching and Backfilling for Utility Systems
- B. Section 02730 – Sanitary Sewer System

1.03 REFERENCES

- A. ASTM C 478 (most current) Standard Specification for Precast Reinforced Concrete Manhole Sections
- B. ASTM C 990 (most current) Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections using Preformed Flexible Joint Sealants
- C. ASTM C 923 (most current) Standard Specifications for Resilient Connectors between Concrete Manholes Structures and Pipe
- D. ASTM C 443 (most current) Standard Specification for Joints for Concrete Pipe and Manholes Using Rubber Gaskets
- E. ASTM C 497 (most current) Test Methods for Concrete Pipe, Manhole Sections, or Tile

1.04 SUBMITTALS

- A. Conform to bid document requirements.
- B. Submit manufacture's data and details of the following items for approval:
 - a. Shop drawings of manhole sections, base units and construction details, joining methods, materials, and dimensions. Drawings shall also include manhole number, location, dimensions, reinforcing details, joint details, and rim and invert elevations.
 - b. Submit calculations signed by a North Carolina Registered Professional Engineer demonstrating the manhole meets the design criteria established in this Section.
 - c. Submit Manufacturer's certification and load test data for manhole steps.
 - d. Manufacture certification for ring and cover.
 - e. Materials to be used in fabricating pipe drop connections.
 - f. Materials to be used for pipe connections

PART 2 PRODUCTS

2.01 MANHOLES – GENERAL

- A. Provide manholes to the depth indicated on the Contract Drawings. Manhole style, type, and inside diameter shall be as noted on the Drawings.

2.02 POLYMER CONCRETE MANHOLES

- A. Manholes shall consist of thermosetting resin, sand, and aggregate. Resin content shall be a minimum of 7% by weight. Resin shall be suitable for use in sanitary sewer environments. If resin additives (i.e., curing agents, pigments dyes, fillers, etc.) are used, they shall not be detrimental to the manhole. Patching or grouting material, if needed, shall be a polyester mortar compound provided by the manhole manufacturer or equal that is approved by the manhole manufacturer.
- B. Manhole components shall be manufactured by the vibratory vertical casting process resulting in a dense, non-porous, corrosion-resistant, homogeneous, composite structure. Manholes shall be steel reinforced per ASTM C 478. Fiberglass reinforcing (acid resistant FRP BAR) may be used in accordance with ACI 440.1R-06 as applicable for polymer concrete design. Manholes shall have a monolithic base slab. Cold joints shall not be permitted. Cast in lifting devices shall not fully penetrate the wall or require sealing. Manholes shall have engineered and rated lifting devices that shall not penetrate through the wall.
- C. Manhole riser sections joined with bell and spigot / ship-lap design seamed with butyl mastic and/or elastomeric sealing gaskets (ASTM C 990) so that on assembly, manhole base, riser and top section make a continuous and uniform manhole structure.
- D. Pipes shall be directly connected to all structures using resilient flexible pipe to manhole connector per ASTM C 923. Cold joint pipe stub grouting shall not be allowed unless shown on plans as such. In cases where cold joint pipe stubs are shown, they shall be grouted using a corrosion resistant grout and rubber water stop grout ring.
- E. Cones, reducer slabs, base slabs and adjusting rings shall be of the same material as adjoining riser sections.
- F. Invert channels shall be factory built with polymer concrete. Portland cement concrete shall not be allowed for channel construction.
- G. Manholes shall support dead and live loads, including vehicle (H20) loads.
- H. Manhole wall thickness shall be designed to resist hydrostatic pressures with a minimum safety factor of 2.0. Wall thickness shall be consistent from invert to grade.
- I. Design wall sections for depth and loading conditions with wall thickness as designed by polymer concrete manufacturer.
- J. Manufacturer of manholes shall employ manufacturing methods and material formulation in use for a minimum of 5 years. Manufacturer of manholes shall have been actively producing manholes under current name for a minimum of 7 years with no more than one year between manhole projects. References demonstrating this requirement shall be submitted for review.

- K. Polymer concrete manhole risers, cones, flat lids, grade rings, and manhole base sections shall be designed by manufacturer to meet the intent of ASTM C478 with allowable compositional and sizing differences as designed by the polymer concrete manhole manufacturer.
- L. Polymer concrete manholes shall be manufactured by U.S. Composite Pipe, Inc., Amorock, or approved equal.

2.03 DESIGN

- A. Manholes shall be designed to withstand all live loads and dead loads, to include vehicle loading (H20), as described in the Contract Documents. Dead loads shall include overburden load, soil side pressure and hydrostatic loading conditions. Manhole shop drawings shall be sealed by a North Carolina Registered Professional Engineer.
- B. Manholes shall be designed with sufficient bottom anchorage and side friction to resist buoyancy. Field cast floatation collars are acceptable.
- C. Polymer Concrete Mix Design shall consist of thermosetting resin, sand, and aggregate. No Portland cement shall be allowed as part of the mix design matrix. All sand and aggregate shall be inert in an acidic environment.
- D. Design wall sections of the manhole for depth and loading conditions outlined in the Contract Documents, with the wall thickness as designed by the polymer concrete manufacturer.
- E. Each polymer concrete manhole component shall be free of all defects, including indentations, cracks, and foreign inclusions that, due to their nature and degree or extent, detrimentally affect the strength and serviceability of the component part. Cosmetic defect shall not be cause for rejection. The nominal internal diameter of manhole components shall not vary more than 2%.
- F. Manhole joints shall be assembled with a bell/spigot or shiplap butyl mastic and/or gasketed joint so that on assembly, manhole base, riser and top section make a continuous and uniform manhole. Joint sealing surfaces shall be free of dents, gouges and other surface irregularities that would affect joint integrity.
- G. Minimum clearance between wall penetrations and joints shall be per manufacturer's design.
- H. Construct invert channels to provide smooth flow transition with minimal disruption of flow at pipe-manhole connections. Invert slope through manhole is as indicated on drawings. All precast base sections to be cast monolithically. Polymer bench and channel are to be constructed with all polymer concrete material, monolithically. Extended ballast slab requirements for buoyancy concerns can be addressed with cementitious concrete material.
- I. Provide resilient connectors conforming to requirements of ASTM C 923 or other options as available. All connectors are to be water tight. Install approved resilient connectors at each pipe entering and exiting manholes in accordance with manufacturer's instructions.

- J. Each manhole shall be marked with the following information - Manufacturer's name or trademark, Manufacturer's location and Production Date.

2.04 TESTING

- A. Manholes: Manholes shall be manufactured in accordance with ASTM C 478
- B. Joints: Joints shall meet the requirements of ASTM C 443.
- C. Compressive strength: Polymer concrete shall have a minimum unconfined compressive strength of 9,000 psi when measured in accordance with ASTM C 497.
- D. Manhole Leakage: Manhole shall be tested in accordance with ASTM C 1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test.

2.05 CUSTOMER INSPECTION

- A. The Fayetteville Public Works Commission (PWC) or their designated representative shall be entitled to inspect manholes and witness the manufacturing process.

2.06 HANDLING AND SHIPPING

- A. Handling and shipping shall be performed in accordance with the Manufacturer's instructions.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation: The installation of manholes shall be in accordance with the Contract Documents, the PWC Project Coordinator, and the manufacturer's recommended practices.
- B. Handling: Properly rated slings and spreader bar shall be used for lifting. The type of rigging used shall be per the manufacturer's recommendation.
- C. Jointing:
 - a. Sealing surfaces and joint components shall be inspected for damage and cleaned of all debris.
 - b. Apply joint lubricant to elastomeric seals. Use only lubricants approved by the manufacturer.
 - c. Use suitable equipment to handle and set manholes.
 - d. Placement and compaction of surrounding backfill material shall be applied so as to provide sufficient and equal side pressure on the manhole.
- D. Field Tests:
 - a. Completed manholes shall be tested in accordance with the provisions outlined in accordance with PWC standard specification section 02730 – Sanitary Sewer

Systems. The Contractor shall furnish all equipment, labor, materials, and pay all costs associated with the tests performed. The Contractor shall schedule all testing with the Public Works Commission's Project Coordinator, a minimum of 48 hours in advance. The Contractor shall cooperate with the Public Works Commission's Project Coordinator and furnish any needed assistance necessary to complete the required testing.

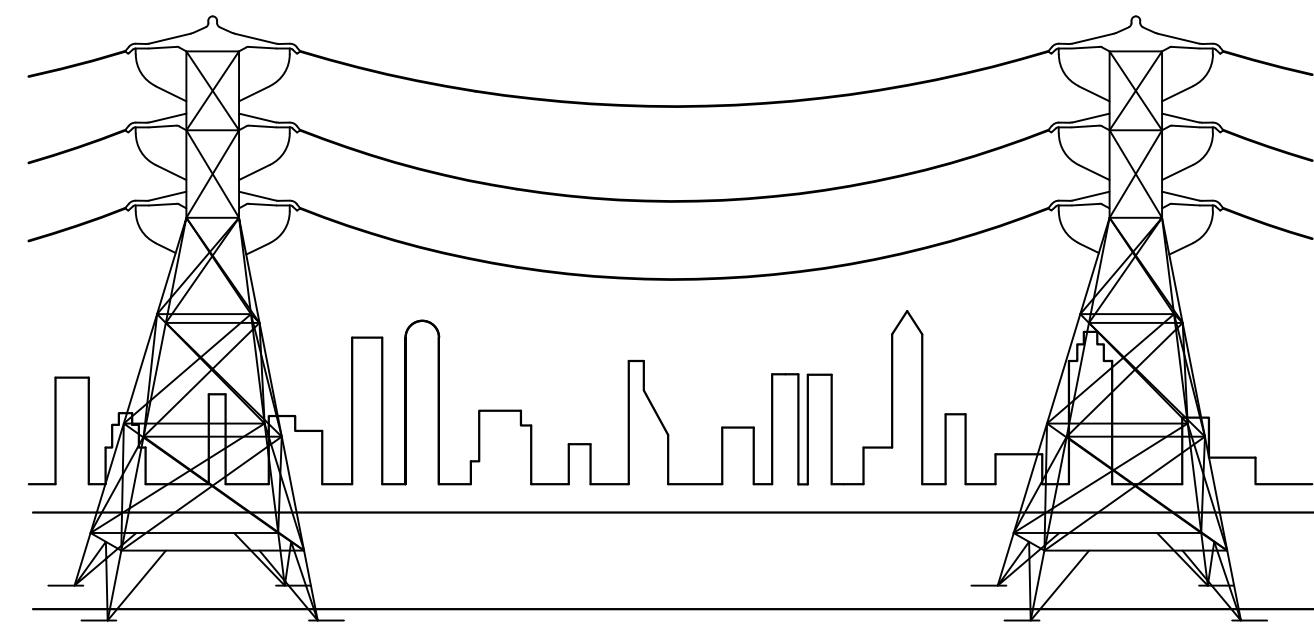
- b. If the manhole fails the initial test, the manhole shall be repaired by an approved method until a satisfactory test is obtained. All repair methods shall be approved by the Public Works Commission prior to being utilized. Retesting shall be performed until a satisfactory test is accomplished.
- c. All replacement, repair, or retesting shall be accomplished by the Contractor. All repairs shall be reviewed and approved by PWC prior to backfill.

-END OF SECTION-

PROJECT DRAWINGS

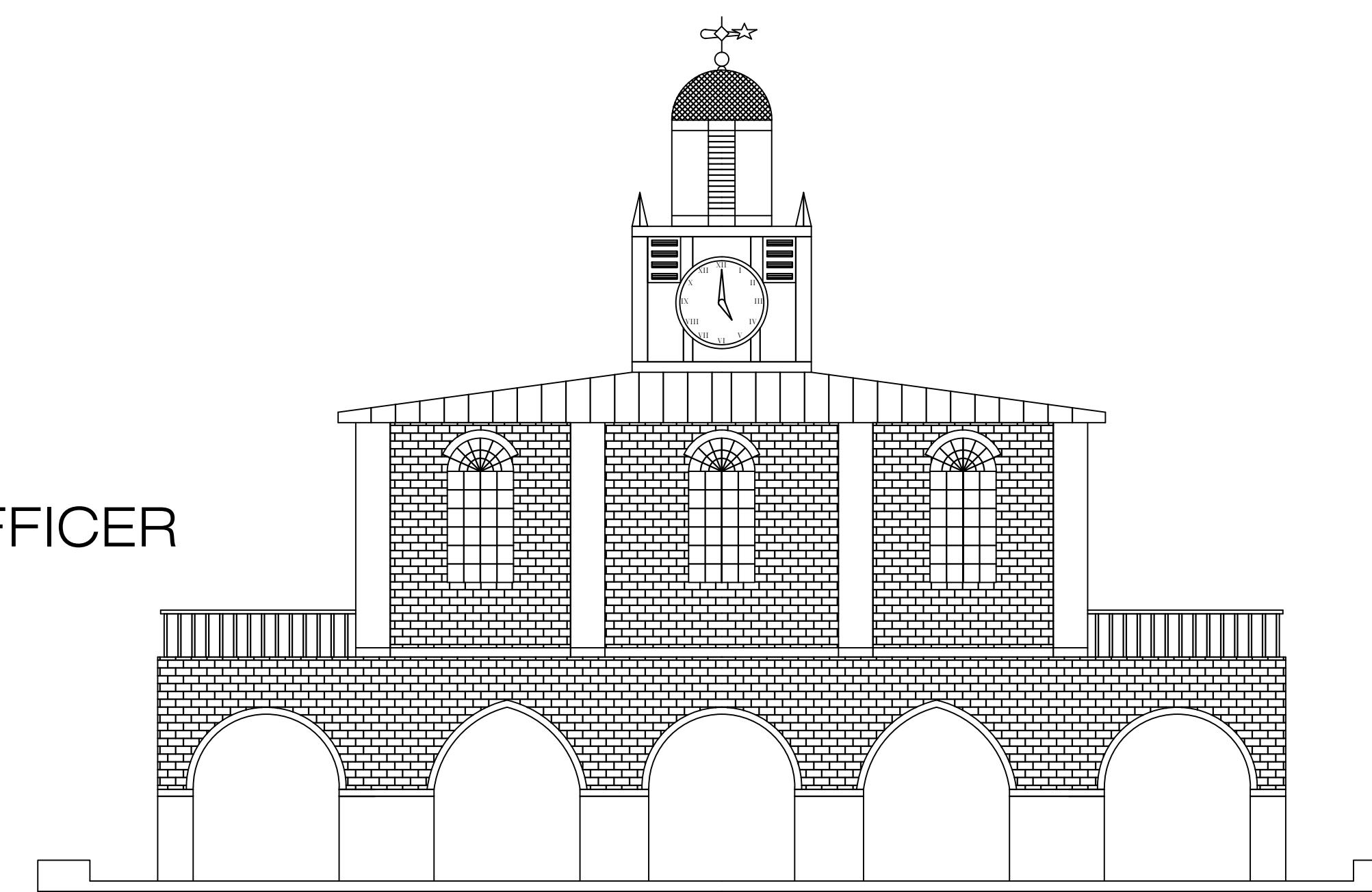
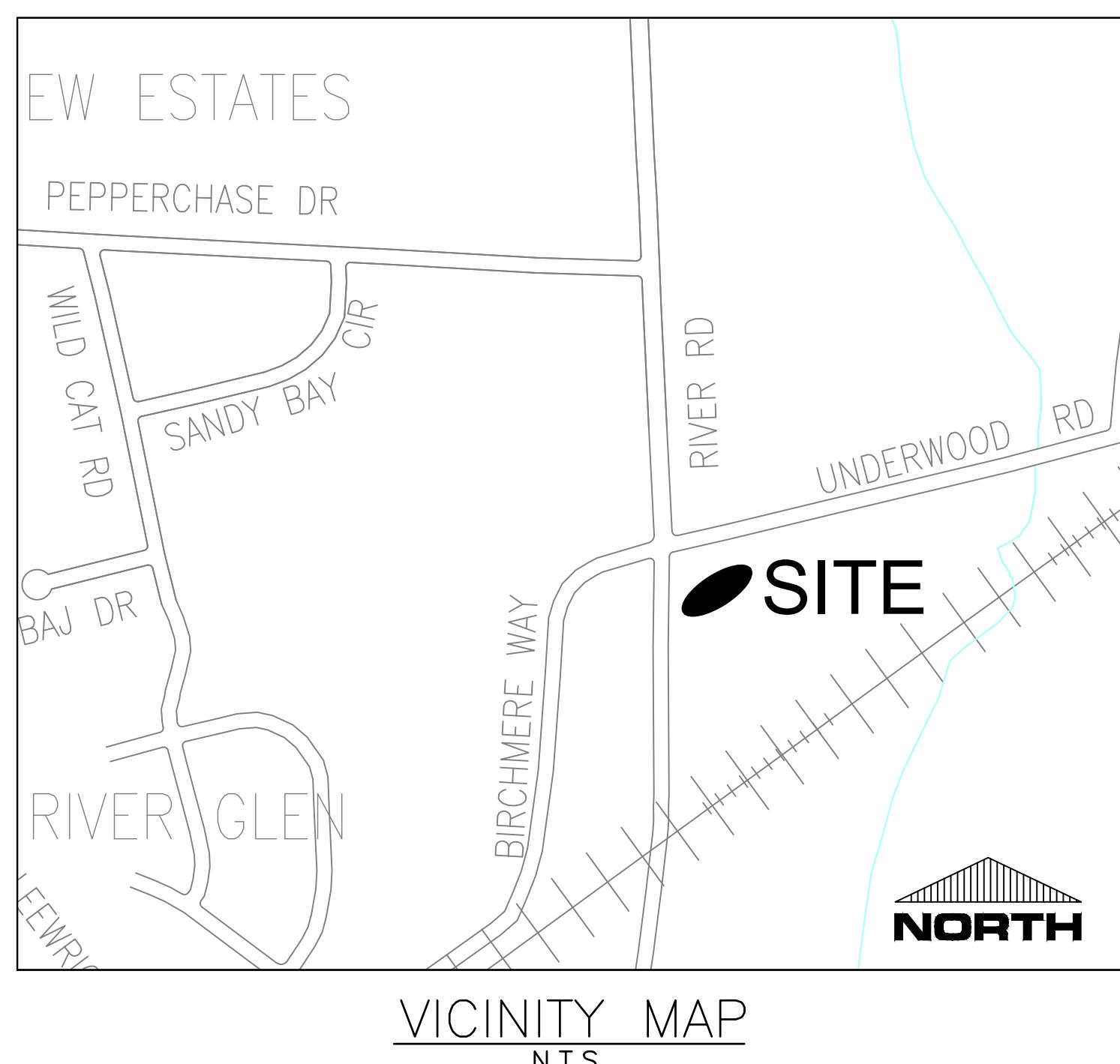
FAYETTEVILLE PUBLIC WORKS COMMISSION

FAYETTEVILLE, N.C.



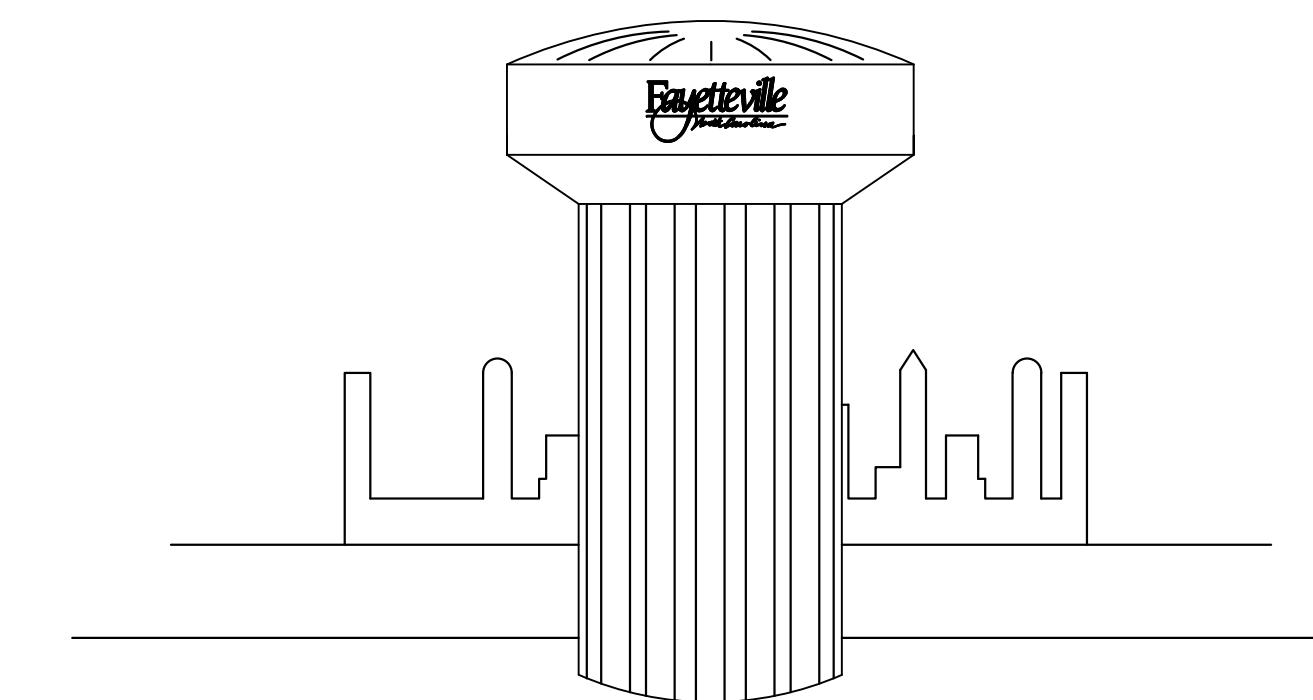
ELECTRICAL

JON RYNNE - ELEC. SYS. CHIEF OPER. OFFICER



PWC COMMISSIONERS

Chairperson - **EVELYN O. SHAW**
Vice Chairperson - **RONNA ROWE GARRETT**
Secretary - **DONALD L. PORTER**
Treasurer - **WADE R. FOWLER, JR.**
CEO/General Manager - **ELAINA L. BALL**



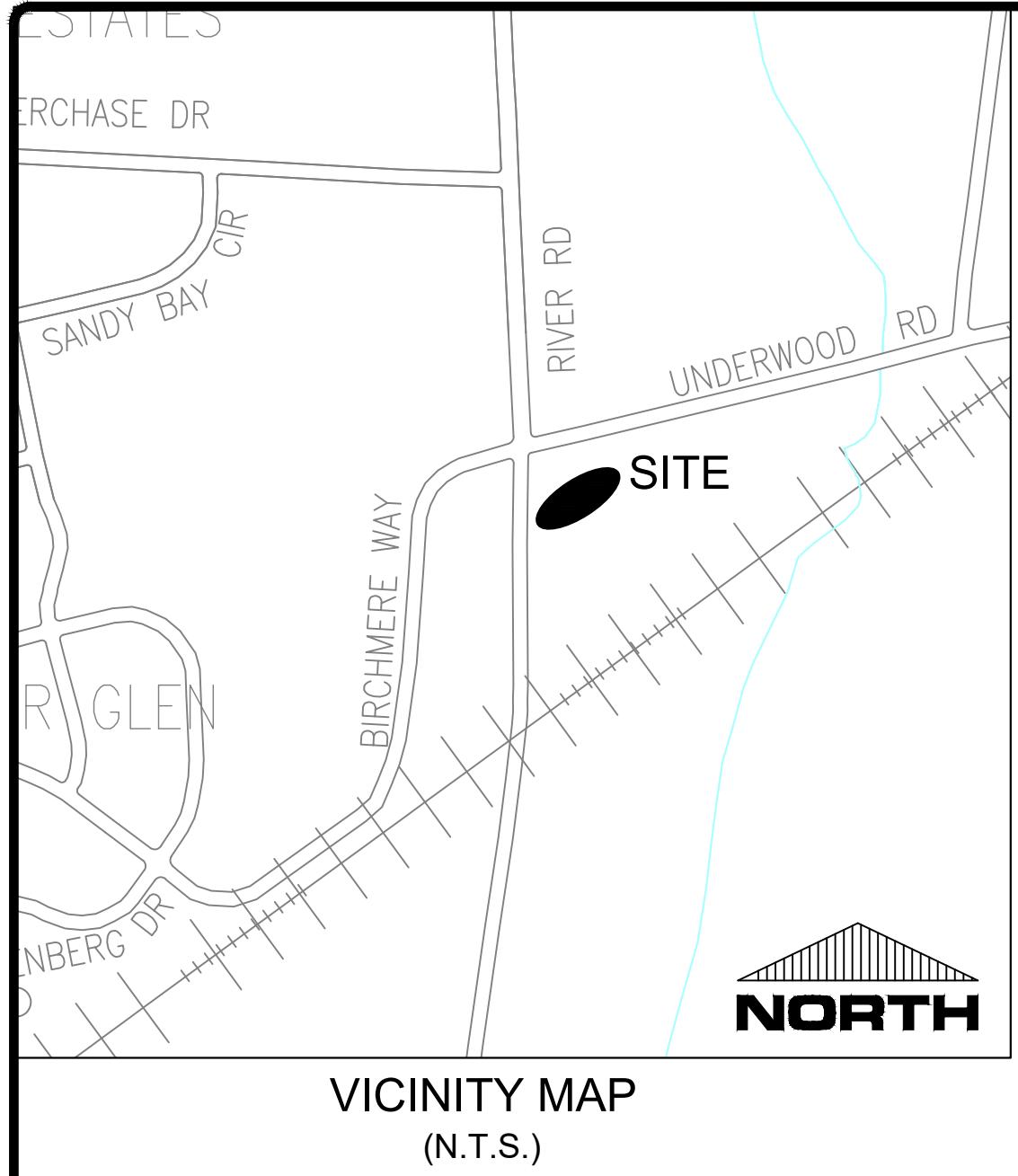
WATER RESOURCES

M.J. NOLAND - W/R CHIEF OPER. OFFICER
MISTY M. MANNING - W/R ENGR. MANAGER

SHEET INDEX

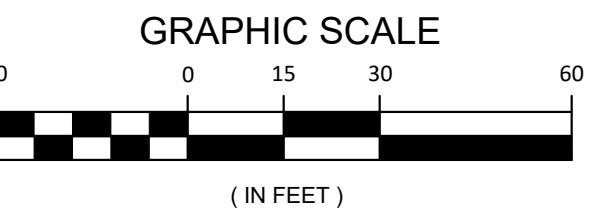
1	PWC COVER SHEET
2	S1 (PLAN AND PROFILE)
3	D1 (STANDARD DETAILS)

**RIVER ROAD
SANITARY SEWER MANHOLE REPLACEMENT
AT CARGILL**

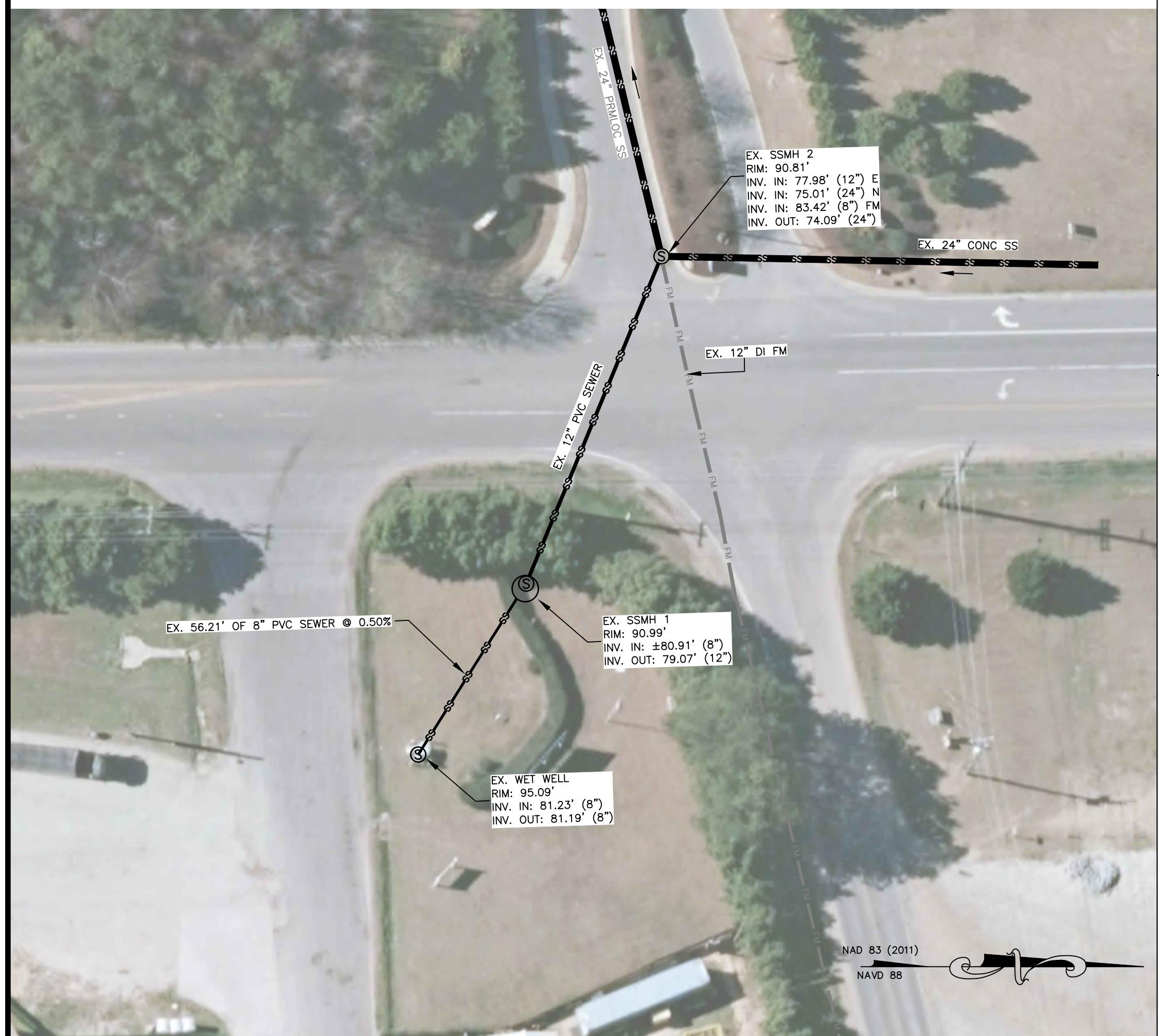


UTILITY CONSTRUCTION NOTES

- ALL SEWER MAINS, LATERALS, AND APPURTENANCES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS.
- ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS.
- CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL NOTIFY FAYETTEVILLE PWC A MINIMUM OF 48 HOURS IN ADVANCE FOR CONSTRUCTION STAKING. CONTRACTOR SHALL MAINTAIN A COPY OF THE CUT SHEET ON THE JOB SITE.
- CONTRACTOR SHALL COORDINATE TESTING AND INSPECTION WITH THE FAYETTEVILLE PWC PROJECT COORDINATOR.
- ALL UTILITIES ARE TO BE VACUUM-TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS.
- CONTRACTOR SHALL COORDINATE AND COMPLY WITH ALL OF THE TRAFFIC CONTROL REQUIREMENTS OF THE CITY OF FAYETTEVILLE, N.C.D.O.T. AND THESE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL SAWCUT AND PATCH ALL ASPHALT AND CONCRETE DISTURBED BY CONSTRUCTION.
- ALL NON-PAVED AREAS SHALL HAVE SOD INSTALLED, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL INSTALL AND MAINTAIN ALL NECESSARY EROSION CONTROL DEVICES IN ORDER TO PREVENT ANY SEDIMENT FROM ENTERING STORM DRAINS, DITCHES, ETC. ALL EROSION CONTROL DEVICES SHALL BE IN ACCORDANCE WITH N.C. DEPARTMENT OF ENVIRONMENTAL QUALITY REQUIREMENTS. NO SEPARATE PAYMENT.
- CONTRACTOR SHALL REPLACE ALL DAMAGED WATER SERVICES FROM MAIN TO METER, UTILIZING 1" COPPER. WATER SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH FAYETTEVILLE PWC DETAIL W-24.



VICINITY MAP
(N.T.S.)

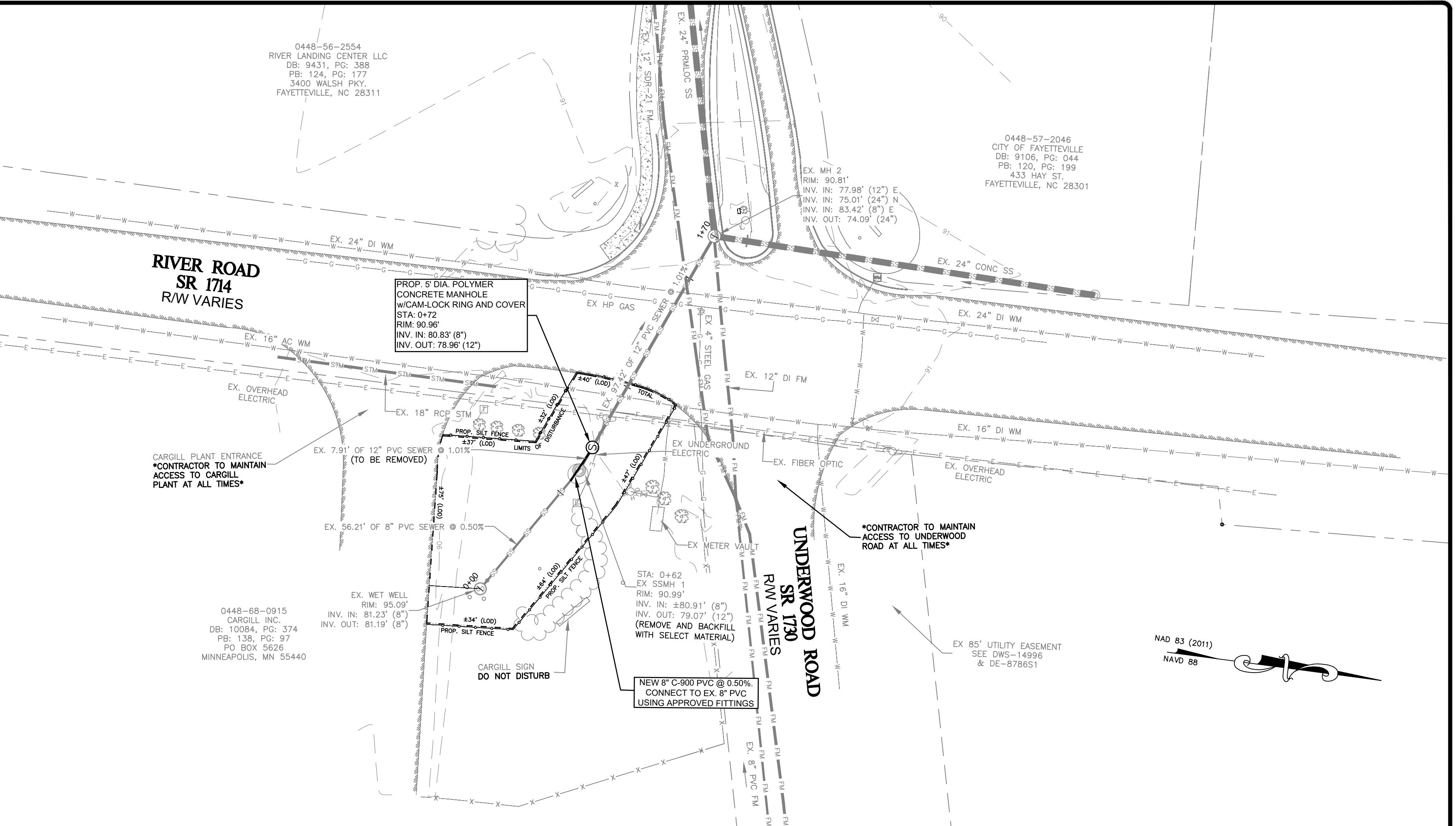


AERIAL PHOTOGRAPHY OF
PROPOSED WORK AREA
(N.T.S.)

LEGEND	
PROPERTY LINE	DITCH
EDGE OF PAVEMENT	EX. PROP. GATE VALVE
BACK OF CURB	AIR RELEASE VALVE
STORM PIPE	CATCH BASIN/DRIP INLET
EX. WATER MAIN	EX. PROP. SSMH
PROP. SS MAIN	EX. PROP. STORM MH
PROP. WATER MAIN	EX. PROP. UTILITY MH
EASEMENT	GAS VALVE
LIMITS OF DISTURBANCE	PROP. PLUG
SILT FENCE	EX. PROP. BLOW OFF
EX. UTIL. LINES	POWER & LIGHT POLE/GUY WIRE
TREELINE	EX. PROP. WATER METER
	EX. PROP. FIRE HYDRANT
	UTILITY PEDESTALS
	EX. PROP. CLEAN OUT
	SIGNAL TRAFFIC BOX
	MAILBOX
	TREE/SHRUB



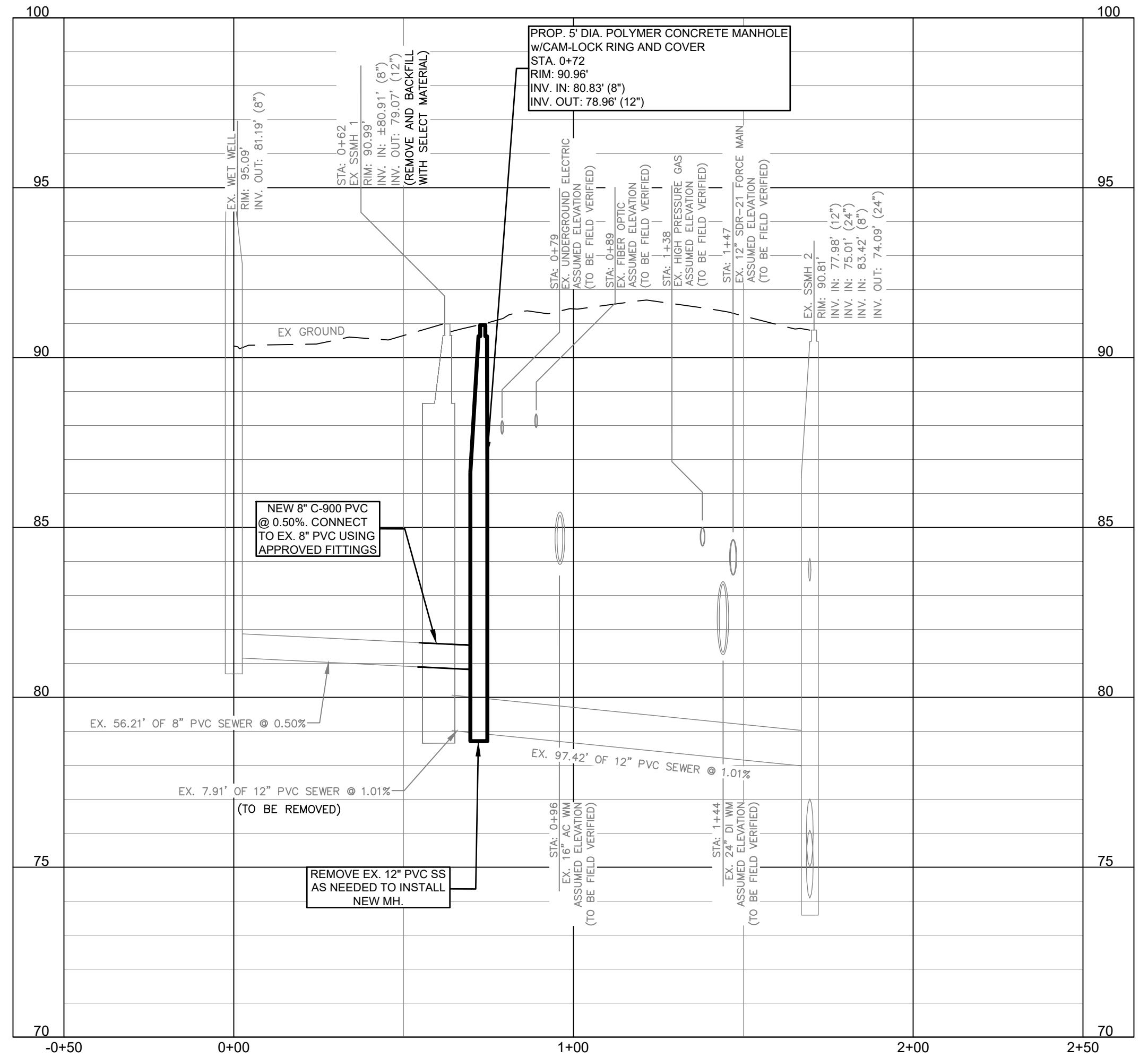
Know what's below.
Call before you dig.



DATE	REVISIONS	BY
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DATE: 4/11/2022	SURVEY/GPS: PWC
DRAWN BY: RT/WDJ	CHECKED BY:
SCALE: HOR: 1"-30'	VERT: 1'-3"

S1
2 OF 3



FAYETTEVILLE PUBLIC WORKS COMMISSION			
<input type="checkbox"/> ORIGINAL	<input type="checkbox"/> TAPS ONLY	<input type="checkbox"/> RECORD DRAWING	<input type="checkbox"/> MODIFICATION
WO # WT:	WO # SD:		
ENG TECH:	PERMIT #:		
REVIEWED BY:	PERMIT #:		
DATE:	DWG #:		
WRP #:	# OF SHEETS		

RIVER ROAD
SANITARY SEWER MANHOLE REPLACEMENT
AT CARGILL

FWC WATER RESOURCES ENGINEERING
P.O. Box 108, Fayetteville, NC 28301
95 Old Wilmington Road, Fayetteville, NC 28301

Electric & Water Utilities

DS-15550

