

PWC

Fayetteville's

HOME TOWN UTILITY

CONTRACT DOCUMENTS AND SPECIFICATIONS FOR
SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT
100% DESIGN ISSUED FOR CONSTRUCTION



June 2022
Fayetteville Public Works Commission
Operations Center
955 Old Wilmington Road
Fayetteville, NC 28301

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INVITATION TO BID
SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT
FOR
FAYETTEVILLE PUBLIC WORKS COMMISSION

Cumberland County
North Carolina

Pursuant to Section 143-129 of the General Statutes of North Carolina, sealed proposals are solicited and will be received at the Administration Building, Fayetteville Public Works Commission 955 Old Wilmington Road, Fayetteville, NC 28301, until **2:00 p.m.**, local time, **Wednesday, July 13, 2022**, by the entrance doors, at which time they will be publicly opened and read for construction of the proposed project.

This project consists of the construction of approximately 525 LF of 16-inch aerial and underground gravity sewer and approximately 220 LF of 8-inch aerial and underground gravity sewer. Portions of the 16-inch aerial sewer are steel encased. This project also consists of the demolition of existing sewer and aerial supports, installation of new manholes, addition of new fill, grading, seeding, sod, and all other items necessary to provide a complete project.

All work shall be done in accordance with Fayetteville Public Works Commission's (PWC) technical standards, specifications, and standard contract terms.

Proposals must be enclosed in a sealed envelope addressed to: Shelby Lesane, Procurement Advisor, Fayetteville Public Works Commission, Fayetteville, North Carolina 28301. The outside of the envelope must be marked **SEALED BID: SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT** and shall indicate the name, address and state license number of the bidder. Proposals shall be submitted on the printed form, or exact copies thereof, contained in the Contract Documents.

A **MANDATORY** pre-bid conference will be held at **10:30 a.m., Tuesday, June 28, 2022** in the Skills Lab.

Questions will be fielded at the pre-bid conference and all prospective bidders are encouraged to attend the conference. Individual telephone inquiries are prohibited. PWC assumes no responsibility to fully inform absentees of clarifications not issued by addendum.

Each proposal shall be accompanied by a cash deposit or certified check drawn on a bank or trust company insured by Federal Deposit Insurance Corporation, payable to Fayetteville Public Works Commission of an amount equal to not less than five percent (5%) of the proposal or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond and upon failure to forthwith make payment, the surety shall pay the obligee an amount equal to the amount of said bond. Said deposit shall be retained by the Owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or give satisfactory surety as required by law.

Performance and Payment Bonds are required in the amount of 100% of the contract amount and shall be furnished by the Contractor.

All Contractors are notified that North Carolina Statutory provisions as to licensing of Contractors will be observed in receiving, reading and awarding the Contracts. (Chapter 87 of the North Carolina Statutes)

The License Classification shall be:

Part 1: Public Utilities (Water and Sewer): Unlimited

Unclassified: Unlimited

Plans and specifications, including Contract Documents, are open to public inspection in the offices of the PWC Procurement Department, 1st floor, PWC Administration Building, 955 Old Wilmington Road, Fayetteville, North Carolina 28301. Plans and specifications including Contract Documents will be available at <https://www.faypwc.com/purchasing/>, in addition to the FSU Construction Resource Office: <https://www.uncfsu.edu/academics/colleges-schoolsand-departments/broadwell-college-of-business-and-economics/outreach-centers/construction-resourceoffice>.

In collaboration with the North Carolina Institute of Minority Economic Development, the Construction Resource Office (CRO) at Fayetteville State University offers services and support to help small, minority, veteran, and women-owned businesses identify and compete for construction-related projects.

The CRO offers assistance with:

- Research, view and print project drawings to scale free of charge
- Software to prepare your bid
- Certification and pre-qualification assistance

Please email the CRO to make an appointment: fsucro@uncfsu.edu.

The Fayetteville Public Works Commission and the City of Fayetteville reserve the right to reject any or all proposals waive all informalities concerning bid, or award bid to the lowest responsive, responsible bidder or bidders, taking into consideration quality, performance, and the time specified in the proposals for the performance of the contract.

The bidder to whom the contract may be awarded must comply fully with the requirements of North Carolina General Statutes (NCGS) §143-129, as amended.

No bids may be withdrawn after the scheduled closing time for the receipt of proposals for a period of ninety (90) days.

FAYETTEVILLE PUBLIC WORKS COMMISSION

Trent Ensley
Procurement Manager

00100 | INSTRUCTIONS TO BIDDERS

Article 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders are defined in Section 00600 Definitions and Terminology of the Contract Documents, the Construction Agreement, or as indicated throughout the Contract Documents. The term "Successful Bidder" means the lowest, qualified, responsive and responsible Bidder to whom Owner (on the basis of Owner’s evaluation as hereinafter provided) makes an award.

Article 2 – GENERAL

- 2.01 Sealed Bids, in accordance with the Bidding Documents, will be received in person or via special courier service or U.S. Postal Service, at the offices of the PWC Procurement Department, 1st Floor, Fayetteville Public Works Commission Administration Building, 955 Old Wilmington Road, Fayetteville, North Carolina, 28301, no later than the time and date specified in the Invitation to Bid.
 - A. In the solicitation or awarding of contracts, the Owner shall not discriminate on the basis of the race, religion, color, sex, age, disability, or national origin of the Bidder.
 - B. The Owner welcomes and encourages the participation of minority-owned businesses in procurement transactions made by the Owner.

Article 3 – COPIES OF BIDDING DOCUMENTS

- 3.01 Complete sets of Bidding Documents and Supplementary Project Information may be obtained as stated in the Invitation to Bid.
- 3.02 Complete sets of Bidding Documents shall be used in preparing Bids. Neither Owner nor Design Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 3.03 The Owner and Design Engineer, in making available copies of Bidding Documents do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

Article 4 – CONTRACTOR'S LICENSE

- 4.01 No General Contractor shall engage in contracting work in the State of North Carolina unless it has been licensed under the provisions of the North Carolina statutes.
- 4.02 Bidders are prohibited from contracting for, or bidding upon, the construction, removal, repair or improvements to or upon real property owned, controlled, or leased by PWC or the City of Fayetteville without a North Carolina contractor's license.
- 4.03 Each bidder shall indicate its North Carolina Contractor's License number on the bid envelope and the Bid Form.
- 4.04 License Classification shall be:

Public Utilities Water and Sewer	Unlimited
Unclassified	Unlimited

Article 5 – EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 5.01 Before submitting a Bid, each Bidder shall (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work, and (d) study and

- carefully correlate Bidder's observations with the Contract Documents, and (e) give the PWC Procurement Manager written notice of all conflicts, errors or discrepancies in the Contract Documents.
- 5.02 Bidder should consult the Technical Specifications for the identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or reports that otherwise may affect cost, progress, or performance of the Work which may have been utilized by Design Engineer in preparation of the Drawings and Specifications. Owner will make copies of such reports if available at the cost (non-refundable) of reproduction to any Bidder requesting them. These reports are not intended to constitute any explicit or implicit representation as to the nature of the subsurface and latent physical conditions, which may be encountered at the site or to constitute explicit or implicit representations as to any other matter, contained in any report. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents. Before submitting his Bid each Bidder will, at his own expense, make such investigations and tests as the Bidder may deem necessary to determine his Bid for performance of the Work in accordance with the Contract Documents
- 5.03 The lands upon which the Work is to be performed right-of-way for access thereto, and other lands available for use by the Contractor in performing the Work are identified in the Contract Documents.
- 5.04 The submission of a Bid constitutes an incontrovertible representation by the Bidder that he has complied with every requirement of this Section and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

Article 6 – INTERPRETATIONS AND ADDENDA

- 6.01 All questions about the meaning or intent of the bid or Contract Documents shall be submitted via email to Shelby Lesane, Procurement Advisor, at shelby.lesane@faypwc.com. In order to receive consideration, questions must be received by **5:00 p.m., Friday, July 1, 2022**. Any interpretations of questions so raised, which in the opinion of Project Engineer require interpretations, will be issued by Addenda mailed or delivered to all parties recorded by Owner and/or Design Engineer as having received the Contract Documents, not later than one (1) day prior to receipt of Bids. An Addendum extending the date for the receipt of Bids or an Addendum withdrawing the Invitation to Bid may be issued any time prior to the date set for the receipt of Bids. Owner and Design Engineer will not be responsible for oral interpretations or clarifications, which anyone presumes to make on their behalf. **Bidders are expressly prohibited from contacting any PWC official or employee associated with this project, except as noted above. Violation of this prohibition is grounds for the immediate disqualification of the bidder.**
- 6.02 The Owner may issue such additional Addenda as may be necessary to clarify, correct, or change the Contract Documents. Such Addenda, if any, will be issued in the manner and within the time stated in Paragraph 1 of this Section.
- 6.03 Each Bidder shall be responsible for determining that each Addenda issued by the Owner has been received before submitting a Bid for the Work.
- 6.04 Each Bidder shall acknowledge the receipt of each Addendum on the Bid Form.

Article 7 – TAXES

- 7.01 The Successful Bidder shall pay all county, city, state and federal taxes required by laws in effect at the time Bids are received and resulting from the Work or traceable thereto, under whatever name levied.
- 7.02 Said taxes shall not be in addition to the contract price between the Owner and the Successful Bidder, as the taxes shall be an obligation of the Successful Bidder and not of the Owner, and the Owner shall be held harmless for same by the Successful Bidder.

Article 8 – SUBMISSION OF BIDS

- 8.01 All Bidders shall use the enclosed Bid Form in submitting their bid prices. The Owner will not accept oral Bids or Bids received by email or telephone or Telecopier (FAX machine) for this Bid
- 8.02 All prices must be F.O.B. delivered to the point as indicated by Bidding Documents. The Owner will grant no allowance for boxing, crating, or delivery unless specifically provided for in the Bidding Documents.
- 8.03 The Bid Form must be completed in blue or black ink or by typewriter. Discrepancies between amounts shown in words and amounts shown in figures will be resolved in favor of the amounts shown in words. Discrepancies in the multiplication of units of Work and the unit prices will be resolved in favor of the correct multiplication of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 8.04 Proposals sent by mail should be registered mail. The sealed Proposal, marked as indicated above, should be enclosed in an additional sealed envelope similarly marked and addressed to:

SEALED BID: SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT

Attn: Procurement Department
Shelby Lesane, Procurement Advisor
955 Old Wilmington Road
Fayetteville, North Carolina 28301

- 8.05 Mark envelope in the lower left-hand corner with the project title, hour, and due date of Bid, and the Bidder's North Carolina contractor registration number.
- 8.06 Bids sent by mail and arriving after the time for opening of Bids shall not be considered as valid Bids. In such instances, the Bidders shall have no claim against the Owner.
- 8.07 All items contained in the Bid Submittal Checklist shall be completely filled out and submitted with the bid. Failure to submit any of the items requested with the Bid Form may be just cause for rejection of the Bid by Owner.
- 8.08 All erasures, insertions, additions, and other changes made by the Bidder to the Bid Form shall be signed or initialed by the Bidder. Bids containing any conditions, omissions, erasures, alterations, or items not called for in the Bid, may be rejected by the Owner as being incomplete or nonresponsive.
- 8.09 The Bid Form must be signed in order to be considered. If the Bidder is a corporation, the Bid must be submitted in the name of the corporation, not simply the corporation's trade name. In addition, the Bidder must indicate the corporate title of the individual signing the Bid.
- 8.10 The Bid Form, the Bid security, if any, and any other documents required, shall be enclosed in a sealed, opaque envelope. Any notation or notations on the exterior of the envelope purporting to alter, amend, modify, or revise the Bid contained within the envelope shall be of no effect and shall be disregarded.
- 8.11 The date and time of the receipt of Bids shall be determined by the date stamp from PWC's Procurement Department. Bidders are responsible for ensuring that their Bids are stamped by Procurement Department personnel by the deadline indicated.
- 8.12 All Bids received in the Procurement Department by the deadline indicated will be kept in a locked box until the time and date set for the opening of Bids.
- 8.13 All late Bids shall be returned unopened to the sender.

Article 9 – BID SECURITY

- 9.01 Each Bid shall be accompanied by Bid security in the form of either a cashier's or certified check or an acceptable Bid Bond in the amount of five percent (5%) of the Bid amount, and made payable to the Fayetteville Public Works Commission, Fayetteville, North Carolina.
- 9.02 The Bid security is a guarantee that if the contract is awarded by the Owner to the Bidder, the Bidder shall enter into the contract with the Owner for the work mentioned in this Bid or forfeit the Bid security to the Owner, not as a penalty, but as liquidated damages.
- 9.03 No forfeiture under a Bid security shall exceed the lesser of (a) the difference between the Bid for which the Bid security was written and the next low Bid of another Bidder, or (b) the face amount of the Bid security.
- 9.04 All bonds shall be executed by a surety company selected by the Bidder, which is legally authorized to do business in the State of North Carolina (NCGS Chapter 44A-26), and the bond shall be the same in both form as well as substance as AIA Document A310, Bid Bond.
- 9.05 The Bidder shall require the attorney-in-fact, who executed the required bond on behalf of the surety company, to affix thereto a certified and current copy of the power of attorney.
- 9.06 The bond premium shall be paid by the Bidder and the cost shall be included in the Bid price.
- 9.07 Any inspection of purchasing transaction records shall be subject to reasonable restrictions to ensure the security and integrity of the records.

Article 10 – MODIFICATION OF BIDS

- 10.01 A Bid may be modified or withdrawn by the Bidder any time prior to the time and date set for the receipt of Bids. The Bidder shall notify the Fayetteville Public Works Commission Procurement Department in writing of its intentions.
- 10.02 Modified and withdrawn Bids may be resubmitted to the Fayetteville Public Works Commission Procurement Department up to the time and date set for the receipt of Bids.

Article 11 – SUBSTITUTE MATERIAL AND EQUIPMENT

- 11.01 The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or required in the Specifications without consideration of possible substitute or "or-equal" items. The procedure for submittal of substitute or "or-equal" items for consideration is set forth in the General Conditions.

Article 12 – SUBCONTRACTORS

- 12.01 Contractor shall subcontract no more than forty-nine percent (49%) of the value of this Contract.
- 12.02 Each Bidder shall submit to Owner with its Bid the List of Subcontractors, Suppliers, other persons, and organizations proposed for those portions of the Work for which such identification is required.

Article 13 – OPENING OF BIDS

- 13.01 Bids will be opened publicly and read aloud on the date set for the receipt of Bids in the Invitation to Bid.
- 13.02 Any Bidder, upon request, shall be afforded the opportunity to inspect Bid records within a reasonable time after the opening of all Bids but prior to award, except in the event that the Owner decides not to accept any of the Bids and to reopen the contract. Otherwise, Bid records shall be open to public inspection only after award of the Contract.

- 13.03 Any inspection of procurement transaction records shall be subject to reasonable restrictions to ensure the security and integrity of the records.

Article 14 – WITHDRAWAL OF BID DUE TO ERROR

- 14.01 If the Bidder desires to withdraw a Bid, the Bidder must do so before the time fixed for the opening, without prejudice by communicating the intent to do so in writing to the Owner, and when reached it shall be handed to him or to his authorized agent unread. After Bids are open, Bids may only be withdrawn in strict accordance with N.C.G.S. §143-129-1.

Article 15 – BIDS TO REMAIN OPEN

- 15.01 All Bids shall remain open for ninety (90) days after the day of the Bid Opening.
- 15.02 Owner is aware of the current pipe market volatility and supply chain issues. Therefore, Owner is willing to evaluate the material prices at time of bid versus time of Contract Execution and consider compensation to address increased material costs that may be unknown at the time of the bid. This evaluation will only be considered for PVC and DI pipe materials and steel encasement and will be conducted in the following manner:
- A. At the time the contract is executed, the Contractor may request payment for stored materials for all PVC and DIP related items in accordance with the Contract Documents by Owner if prices have substantially increased (5% or greater) or decreased (5% or greater). Contractor shall provide the detailed quote from the supplier that was utilized to calculate the bid pricing, provide and updated quote from the supplier for all pipe material on the project for evaluation, and a schedule of values for the breakdown of the line-item prices for pipe related items (PVC, DIP, and steel encasement). In addition, the confirmed material delivery date shall be provided to Owner for all said material. This information will be used by Owner to consider: (1) the establishment of a notice to proceed date and (2) determination of any percentage of pipe price escalation or decrease. It shall be noted that compensation is not guaranteed and shall be based upon evaluation of material price increases with supporting documentation; an increase or decrease will only be considered if the difference in material cost is greater than a 5% escalation or 5% de-escalation. If approved, a Change Order will be executed to reflect material price increases associated with PVC and DI pipe materials and steel encasement only. Additional compensation for profit and overhead, associated with PVC and DI pipe materials and steel encasement, will not be granted.
 - B. Bidder shall complete the material price form as contained in Section 0300 to establish material price for PVC and DI pipe materials and steel encasement as time of Bid and include authenticity of these prices with dated quote from the supplier. Failure to complete this form and furnish the supplementary bid documents may result in an unresponsive bid.

Article 16 – AWARD OF CONTRACT

- 16.01 Owner reserves the right to reject any and all Bids, to waive any and all informalities, and to disregard all nonconforming, nonresponsive, or conditional Bids.
- 16.02 In case of a tie Bid, the tie shall be decided by lot.
- 16.03 It is the intent of the Owner to recommend the award of this contract to the lowest responsive, responsible bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available for the project. In determining the lowest responsive, responsible bidder, the Owner may consider, among other things, the Bidder's past performance, conduct on other contracts, and other information provided by the Bidder as noted below or as requested by PWC.

- 16.04 For the purpose of determining the lowest responsive, responsible bidder, the Basis of Award shall be the total of the Base Bid and Alternate(s) (if applicable) as selected by the Owner.
- 16.05 Owner may consider the operating costs, maintenance considerations, performance date, and guarantees of materials and equipment.
- 16.06 Owner may conduct such investigations as it deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of the Bidders, as well as other considerations, to include but not limited to resources available to the Bidder to perform the work effectively, proposed Subcontractors and other persons and organizations to do the work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.
- 16.07 Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.
- 16.08 If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within ninety (90) days after the day of the Bid Opening.
- 16.09 The Bidder to whom the contract is awarded shall, within ten (10) days after prescribed documents are presented for signature, execute and deliver to the Owner the Contract Documents and any other forms or bonds required by the Bid. Failure to do so may result in a Bidder's forfeiture of its Bid security as liquidated damages.
- 16.10 The Bidder is required to complete the attached forms that will allow the Owner to verify that the Bidder is qualified to perform the Work described in these Contract Documents. **All forms shall be completed and submitted with the Bid.** Failure to submit all the required forms shall be considered grounds for the Owner to reject the bid.
- 16.11 The Owner will review all of the bids and qualification data to determine the lowest responsive, responsible bidder. The Owner reserves the right to not award the Contract to the lowest bidder if the information provided is not complete, does not meet the satisfaction of the Owner, has been falsified, or the Bidder is otherwise determined to be non-responsive.
- 16.12 During the evaluation phase, bid proposals will be reviewed by PWC to ascertain which proposals technically and otherwise address all the requirements of the Contract Documents. Proposals determined to be non-responsive or not sufficiently responsive may be disqualified.
- 16.13 The Owner may conduct such investigations/verifications as deemed necessary to establish the responsibility, qualification, and financial ability of the Bidder. Should the Owner adjudge that the apparent low bidder is not the lowest responsive, responsible bidder by virtue of the information furnished, said apparent low bidder will be so notified and his/her bid security shall be returned to him/her without prejudice. Failure or refusal to furnish any items of information requested by the Owner shall be considered as non-responsive and therefore basis for rejection of the bid.

Article 17 – PERFORMANCE AND OTHER BONDS

- 17.01 The General Conditions set forth Owner's requirements as to Performance and other Bonds.

Article 18 – SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

- 18.01 NCDOT Disadvantaged Business Enterprise (DBE) and Historically NC DOA Underutilized Business (HUB) firms with current certifications are acceptable for listing in the bidder's submittal of SDBE participation and will be considered to meet the contract goal. Firms that are certified through NCDOT are listed at the "Vendor Directory" which can be accessed through the following:
<https://www.ebs.nc.gov/VendorDirectory/default.html>. Firms that are certified through NC DOA are listed

at the “HUB Vendor Search” which can be accessed through the following
<https://www.doa.state.nc.us/HUB/searchhub.htm>

- 18.02 Bidder shall submit with the Bid, the SDBE documentation requested in these specifications. It is strongly recommended that the Bidder attend the Pre-Bid Conference, as important information will be reviewed. Failure to submit proper documentation may result in disqualification of the proposal. Questions regarding SDBE requirements shall be directed to Lexi Hasapis, Local Vendor Procurement Analyst, at (910) 580-6900 / lexi.hasapis@faypwc.com.

Article 19 – E-VERIFY

- 19.01 Contractor/Vendor 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.
- 19.02 Contractor/Vendor 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 NCGS §64-26(a).
- 19.03 Contractor/Vendor hereby pledges, attests, and warrants through execution of this Agreement that Contractor/Vendor complies with the requirements of Article 2, Chapter 64 of the North Carolina General Statutes and further pledges, attests, and warrants that any subcontractors currently employed by or subsequently hired by Contractor/Vendor shall comply with any and all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement.

Article 20 – IRAN DIVESTMENT ACT

- 20.01 As mandated by N.C.G.S. 147-86.59(a), Contractor/Vendor hereby certifies that it is not listed on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C.G.S. 147-86.58. Contractor/Vendor further certifies that in accordance with N.C.G.S. 146-86.58(b) that it shall not utilize any subcontractor found on the State Treasurer's Final Divestment List. Contractor/Vendor certifies that the signatory to this Purchase Order authorized by the Contractor/Vendor to make the foregoing statement.

*** END OF SECTION ***

00110 | PROCUREMENT SCHEDULE

Article 1 – PERFORMANCE AND DELIVERY SCHEDULE

1.01 The following table summarizes the procurement schedule for this Project. All times are local to PWC.

Pre-Bid Conference MANDATORY	10:30 a.m., Tuesday, June 28, 2022 (Skills Lab)
Deadline for Questions from Bidders	5:00 p.m., Friday, July 1, 2022 All Questions must be submitted in writing.
Bid Opening	2:00 p.m., Wednesday, July 13, 2022 PWC Administration Building Outside by entrance doors
Total Contract Time	150 consecutive calendar days
Liquidated Damages	\$500 per Calendar Day for IMC and for Total Contract Time

00300 | BID FORM**PROJECT: SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT****THIS BID IS SUBMITTED TO:**

Fayetteville Public Works Commission
Attn: Shelby Lesane, Procurement Advisor
955 Old Wilmington Road
Fayetteville, North Carolina 28301

- A. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into a Contract with OWNER in the form included in the Contract Documents to perform and furnish all Work specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
- B. BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including, without limitation, those dealing with the disposition of payment and performance bonds, and insurance certificates. This bid will remain open for ninety (90) days after the day of Bid opening. BIDDER will sign the Contract and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of receipt of the Notice of Award by the BIDDER.
- C. In submitting this Bid, Bidder represents, as more fully set forth in the Contract, that:
1. BIDDER has examined copies of all the Contract Documents and of the following addenda, receipt of all which is acknowledged on the bid summary page.
 2. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules and regulations) and the conditions affecting cost and progress of performance of the work, and has made such independent investigations as BIDDER deems necessary.
 3. BIDDER acknowledges that OWNER does not assume responsibility for the accuracy of dimensions or completeness of information and data shown or indicated in the Bidding Documents with respect to existing facilities.
 4. BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site of the Work (except underground facilities) and all drawings of physical conditions in or relating to existing surface or subsurface structures, pipelines, and utilities at or contiguous to the site are provided within the Contract Documents. Geotechnical Reports and other information regarding subsurface conditions are identified in the attached appendices and detailed in Article 4 of the General Conditions. BIDDER acknowledges that the OWNER does not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to underground facilities at or contiguous to the site of Work. BIDDER had obtained and carefully studied (or assumes responsibility for have done so) all such additional or supplementary examinations investigations, explorations, tests, studies, and data that are necessary to identify and understand conditions (surface, subsurface, and underground facilities) at or contiguous to the site of Work or otherwise which may affect cost, progress, performance, or furnishing the Work or which relate to any aspect of means, methods, techniques, sequences, and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. BIDDER waives all rights to claim that any additional examinations, investigations, explorations, tests, studies, or data are necessary for the proper submission of the Bid for the performance and furnishing of the Work in accordance with the Contract Time, Contract Price, and other terms and conditions of the Contract Documents.

5. BIDDER hereby certifies that, if awarded the Contract for construction of the Project, he will take all possible actions to minimize costs to the OWNER which are related to any disruptions in any part of the Work resulting from unforeseeable conditions which may be encountered and work changes or additions which may be made.
6. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, exploration, tests, studies, and data with the Contract Documents.
7. BIDDER has given OWNER written notice of all conflicts, errors, ambiguities, or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by OWNER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
8. By bidding in response to this invitation, the BIDDER represents that in the preparation and submission of this Bid, said BIDDER did not, either directly or indirectly, enter into any combination or arrangement with any person, firm or corporation or enter into any agreement, participate in any collusion, or otherwise take any action in the restraint of free, competitive bidding in violation of the Sherman Act (15 U.S.C. Section 1).
9. Bid form must be completed in blue or black ink or by typewriter. The Bid price of each item on the form must be stated in both words and numerals. In case of a conflict, words shall take precedence. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the correct multiplication of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
10. BIDDER understands that the award of contract will be made on the basis of the total Bid amount which will be determined as the sum of the unit price and lump sum Bid Items.
11. BIDDER understands that quantities are estimated and are not guaranteed. They are solely for comparing Bids and establishing the total Bid amount. The Contract Price may be modified by Change Order, and final payment will be based on the quantities of work actually furnished and installed by the successful BIDDER.
12. BIDDER shall complete the Work for the prices indicated on the following pages.
13. BIDDER shall complete the material price form as contained in Section 0300 to establish material price for PVC and DI pipe materials and steel encasement as of time of Bid and include authenticity of these prices with dated quote from a reputable, verifiable supplier. Failure to complete this form and furnish the supplementary bid documents may result in a non-responsive bid.

PART A - 16-inch GRAVITY SEWER INSTALLATION (STA. 1+00 to STA. 5+35, STA. 10+00 to STA. 10+79)

Bid Item No.	Spec. 01200 Ref. No.	Item Description	Unit	Estimated Quantities	Estimated Unit Price	Total Estimated Amount
SITE PREPARATION						
A-1	01200-1.1	Mobilization (less than or equal to 3% of SubTotal of Part A)	LS	1	\$	\$
A-2	01200-1.2	Allowance for "Third Party" Vibration Monitoring	LS	1	\$ 5,000.00	\$ 5,000.00
A-3	01200-1.23	Furnish and Install Temporary Bypass Pumping	LS	1	\$	\$
A-4	01200-1.22	Erosion and Sedimentation Control Measures	LS	1	\$	\$
A-5	01200-1.28	Contingency Allowance	LS	1	\$ 10,000.00	\$ 10,000.00
GRAVITY SEWER MAIN INSTALLATION						
A-6	01200-1.4	Furnish and Install 16-inch C900 DR18 PVC Gravity Sewer Pipe to Replace Ex. 15-inch VC Gravity Sewer Pipe (Open Trench) @ 0 - <8' Depth	LF	79	\$	\$
A-7	01200-1.4	Furnish and Install 16-inch C900 DR18 PVC Gravity Sewer Pipe (Open Trench) @ 0 - <8' Depth	LF	154	\$	\$
A-8	01200-1.3	Furnish and Install 16-inch CL 56 Epoxy-Lined Ductile Iron Gravity Sewer Pipe (Open Trench) @ 0 - <8' Depth	LF	40	\$	\$
A-9	01200-1.6	Furnish and Install 16-inch CL 53 RJ x FLG Epoxy-Lined Ductile Iron Gravity Sewer Pipe (Aerial)	LF	197	\$	\$
A-10	01200-1.7	Furnish and Install 30-inch Steel Encasement Pipe (.375" wall thickness) with 16-inch CL 53 RJ x FLG Epoxy-Lined DIP Gravity Sewer Carrier Pipe (Aerial)	LF	44	\$	\$
A-11	01200-1.9	Furnish and Install Double H-Piles (13'-0" Min. Embed)	EA	2	\$	\$
A-12	01200-1.10	Furnish and Install Single H-Piles (13'-0" Min. Embed)	EA	6	\$	\$
A-13	01200-1.11	Connect to Existing 15-inch VC Gravity Sewer	EA	2	\$	\$

Bid Item No.	Spec. 01200 Ref. No.	Item Description	Unit	Estimated Quantities	Estimated Unit Price	Total Estimated Amount
A-14	01200-1.24	Furnish and Install New Chain Link Double Swing Gate	EA	2	\$	\$
A-15	01200-1.25	Permanent Sod Grass (No Overage Allowed)	SY	1500	\$	\$
A-16	01200-1.26	Permanent Seeding	AC	0.69	\$	\$
A-17	01200-1.27	Undercut Excavation	CY	50	\$	\$
GRAVITY SEWER MANHOLES						
A-18	01200-1.17	Furnish and Install 6-foot Dia. Precast Concrete Doghouse Manhole, Non-Traffic, Cam Lock Ring and Cover @ 0 - <8' Depth	EA	1	\$	\$
A-19	01200-1.18	Furnish and Install 4-foot Dia. Precast Concrete Manhole, Non-Traffic, Cam Lock Ring and Cover @ 0 - <8' Depth	EA	2	\$	\$
A-20	01200-1.19	Furnish and Install 4-foot Dia. Precast Concrete Manhole, Non-Traffic, Cam Lock Ring and Cover to Replace Existing Manhole @ 0 - <8' Depth	EA	1	\$	\$
A-21	01200-1.20	Furnish and Install 4-foot Dia. Precast Concrete Manhole, Traffic Rated Ring and Cover @ 0 - <8' Depth	EA	1	\$	\$
ABANDONMENT OF EXISTING GRAVITY SEWER						
A-22	01200-1.12	Furnish and Install 5LF Grout Plug	EA	4	\$	\$
A-23	01200-1.13	Remove Existing 16-inch CI Gravity Sewer (Aerial)	LF	260	\$	\$
A-24	01200-1.13	Remove Existing 15-inch VC Gravity Sewer (Open Trench)	LF	79	\$	\$
A-25	01200-1.16	Remove Existing Manhole	EA	1	\$	\$
A-26	01200-1.14	Remove Existing Double H-Pile Steel Pipe Support	EA	1	\$	\$
A-27	01200-1.15	Remove Existing Variable Width Concrete Pipe Support	EA	13	\$	\$

Total Part A \$

PART B - 8-inch GRAVITY SEWER INSTALLATION (STA. 10+79 to STA. 13+21)

Bid Item No.	Spec. 01200 Ref. No.	Item Description	Unit	Estimated Quantities	Estimated Unit Price	Total Estimated Amount
SITE PREPARATION						
B-1	01200-1.1	Mobilization (less than or equal to 3% of SubTotal of Part B)	LS	1	\$	\$
B-2	01200-1.2	Allowance for "Third Party" Vibration Monitoring	LS	1	\$ 5,000.00	\$ 5,000.00
B-3	01200-1.23	Furnish and Install Temporary Bypass Pumping	LS	1	\$	\$
B-4	01200-1.22	Erosion and Sedimentation Control Measures	LS	1	\$	\$
B-5	01200-1.28	Contingency Allowance	LS	1	\$ 10,000.00	\$ 10,000.00
GRAVITY SEWER MAIN INSTALLATION						
B-6	01200-1.3	Furnish and Install 8-inch CL 56 Epoxy-Lined Ductile Iron Gravity Sewer Pipe to Replace Ex. 8-inch Gravity Sewer Pipe (Open Trench) @ 0 - <8' Depth	LF	91	\$	\$
B-7	01200-1.6	Furnish and Install 8-inch CL 53 RJ x FLG Epoxy-Lined Ductile Iron Gravity Sewer Pipe to Replace Ex. 8-inch Gravity Sewer Pipe (Aerial)	LF	152	\$	\$
B-8	01200-1.10	Furnish and Install Single H-Piles (13'-0" Min. Embed)	EA	5	\$	\$
B-9	01200-1.10	Furnish and Install Single H-Piles (21'-0" Min. Embed)	EA	1	\$	\$
B-10	01200-1.21	Furnish and Install Precast Concrete Anchor Block	EA	2	\$	\$
B-11	01200-1.11	Connect to Existing 8-inch Gravity Sewer	EA	1	\$	\$
B-12	01200-1.24	Furnish and Install New Chain Link Double Swing Gate	EA	1	\$	\$
B-13	01200-1.25	Permanent Sod Grass (No Overage Allowed)	SY	667	\$	\$
B-14	01200-1.26	Permanent Seeding	AC	0.89	\$	\$
B-15	01200-1.27	Undercut Excavation	CY	25	\$	\$

Bid Item No.	Spec. 01200 Ref. No.	Item Description	Unit	Estimated Quantities	Estimated Unit Price	Total Estimated Amount
ABANDONMENT OF EXISTING GRAVITY SEWER						
B-16	01200-1.13	Remove Existing 8-inch CI Gravity Sewer (Aerial)	LF	152	\$	\$
B-17	01200-1.13	Remove Existing 8-inch CI Gravity Sewer (Open Trench)	LF	91	\$	\$
B-18	01200-1.14	Remove Existing Double H-Pile Steel Pipe Support	EA	2	\$	\$
B-19	01200-1.15	Remove Existing Variable Width Concrete Pipe Support	EA	7	\$	\$
TOTAL PART B						\$
TOTAL PART A + PART B						\$

TOTAL BID

SUBTOTAL FOR PART A: \$ _____

SUBTOTAL FOR PART B: \$ _____

TOTAL BID PRICE FOR PROJECT (ADDED): \$ _____

The BIDDER has received, acknowledged, and used the following addenda in completing the Bid. (Initial and Date as appropriate).

Addendum No. 1 _____	Dated _____
Addendum No. 2 _____	Dated _____
Addendum No. 3 _____	Dated _____
Addendum No. 4 _____	Dated _____
Addendum No. 5 _____	Dated _____

The undersigned BIDDER certifies that they are a licensed as a Contractor under the provisions of the Act of North Carolina Legislature, Session 1952 as amended regulating the practice of General Contracting, and that their license number is _____ (License Number).

MATERIAL PRICE FORM

In compliance with the Instructions to Bidders and the Bid Proposal, the undersigned submits the following material price to be used in performing the Work.

The Bidder certifies that all material pricing is the basis of their bid and was utilized to calculate the bid pricing for PVC and DI piping and steel encasement.

Material Description**	Material Unit	Material Unit Price/Quote	Supplier/Vendor Name and Address	Date of Quote
16" C900 DR18 PVC	LF	\$ _____		
16" CL 56 SJ DIP	LF	\$ _____		
16" CL 53 RJ x FLG DIP	LF	\$ _____		
30" Steel Encasement Pipe, Wall Thickness 0.375"	LF	\$ _____		
8" CL 56 SJ DIP	LF	\$ _____		
8" CL 53 RJ x FLG DIP	LF	\$ _____		

**Bidder shall include authenticity of these prices with dated quote from the supplier.

The undersigned BIDDER hereby agrees to accept an award of the Contract based on the Total Contract Amount as accepted by the OWNER and as indicated on the Notice of Award.

D. BIDDER agrees that Work shall be completed within the time frame indicated in the Agreement as follow:

- 1. Contract Time:
 - a. Final Completion: All work described herein, including restoration and all punch list items, shall be complete within 150 consecutive calendar days from the start date stipulated in the Notice to Proceed.
- 2. Liquidated Damages: The BIDDER acknowledges that time is of the essence in this Contract and that the OWNER will suffer financial loss if the Work is not complete within the time specified in Paragraph D.1 above plus any extensions thereof allowed in accordance with these Contract Documents. BIDDER also recognizes the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the Work is not complete on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$500.00 per calendar day for each day that expires after the time specified in Paragraph D.1, plus any proper time extension, until the Work is finally complete.

E. The following documents are attached to and made part of this bid:

Required Bid Security in the form of either a cashier's check or certified check or Bid Bond in the amount of 5% of maximum Bid price.

F. Communications concerning this Bid shall be addressed to:
(CONTRACTOR's Name, Address and Telephone Number, Email)

G. The terms used in this Bid are defined in Section 00600 – Definitions and Terminology of the Contract Documents, the Construction Agreement, or as indicated in the Contract Documents and have the meanings assigned to them therein, which are incorporated by reference as if fully set forth herein.

H. An individual contractor is required to furnish his social security number and sole proprietorship, partnership and corporation are required to furnish their employer identification numbers to the Fayetteville Public Works Commission. Please indicate this information on this Bid Form as follows:

Social Security Number: _____

Federal Employer Identification Number: _____

SUBMITTED ON _____, 20____.

AN INDIVIDUAL

BY _____ (SEAL)
(Individual's Name and Signature)

Doing Business as: _____

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____

NOTARY PUBLIC

My Commission Expires: _____

A PARTNERSHIP

BY _____ (SEAL)
(Firm Name)

(General Partner and Signature)

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____.

NOTARY PUBLIC

My Commission Expires: _____

A CORPORATION

BY _____
(Corporation Name) (State of Incorporation)

BY _____ (SEAL)
(Name and Title of Person Authorized to Sign and Signature)

ATTEST: _____
(Secretary or Assistant Secretary and Signature)

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____.

NOTARY PUBLIC

My Commission Expires: _____

A JOINT VENTURE

BY _____
(Name and Signature)

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____.

NOTARY PUBLIC

My Commission Expires: _____

(Each joint venturer must sign. The name of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

00310.1 | BID SUBMITTAL CHECKLIST

All items listed on this form are required for a complete Bid Package. The Bidder shall indicate that the items have been included in the Bid Package by marking each respective box.

BID FORM	
<input type="checkbox"/>	00300 – Bid Form
BID SUPPLEMENTS	
<input type="checkbox"/>	00310.1 – Bid Submittal Checklist
<input type="checkbox"/>	00310.2 – Bid Security
<input type="checkbox"/>	00310.3 – List of Subcontractors
BIDDER'S REPRESENTATIONS AND CERTIFICATIONS	
<input type="checkbox"/>	00320.1 – Bidder Qualifications
<input type="checkbox"/>	00320.2 – Affidavit of Non-Collusion
<input type="checkbox"/>	00320.3 – Nondiscrimination Acknowledgement
<input type="checkbox"/>	00320.4 – Equal Employment Opportunity Acknowledgement
<input type="checkbox"/>	00320.5 – Affidavit of Organization and Authority
<input type="checkbox"/>	00320.6 – Certification Regarding Debarment, Suspension and Other Responsibility Matters
<input type="checkbox"/>	00320.7 – F.T.A. Certification Regarding Lobbying
SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM FORMS	
<input type="checkbox"/>	SDBE Contract Provisions Acknowledgement
<input type="checkbox"/>	SDBE Identification of Small Disadvantaged Business Participation
<input type="checkbox"/>	SDBE Affidavit of Compliance (SDBE Affidavit A or SDBE Affidavit B)
ADDITIONAL REQUIREMENTS	
<input type="checkbox"/>	Photocopy of Contractor's License
<input type="checkbox"/>	Enter Contractor's License Number where called for in the Bid Form and on the outside of the sealed envelope containing the Bid
<input type="checkbox"/>	Material Price for PVC and DI pipe material and Steel Encasement (Bidder must also include authenticity of these prices with dated quote from the supplier)
<input type="checkbox"/>	Provide the responsible North Carolina Registered Agent for Insurance Claims. Include contact information.

Authorized Signature of Bidder

00310.2 | BID SECURITY FORM

This is a Bid Bond that is subject to the provisions of Article 3 of Chapter 44A of the North Carolina General Statutes.

This Bond is Executed on _____, 20____.

The name of the PRINCIPAL is _____

The name of the SURETY is _____

The name of the OWNER is Fayetteville Public Works Commission

The amount of the Bond is _____
_____ (Dollars) (\$ _____)

KNOW ALL MEN BY THESE PRESENTS, the Principal and Surety above named are hereby held and firmly bound unto the above named OWNER hereinafter called the OWNER in the penal sum of the amount stated above in lawful money of the United States, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the OWNER a certain Bid attached hereto and hereby made a part hereof to enter into a Contract in writing, for the construction of:

SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT

NOW, THEREFORE

If said Bid shall be rejected, or in the alternate, if said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection herewith, and shall in all other respects perform the agreement created by acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein state.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall in no way be impaired or affected by any extension of time within the OWNER may accept such Bid; and said surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

ATTEST:

(Principal Secretary)
(SEAL)

Principal

BY:

(Print Name of Principal)

(Address)

(City, State, Zip)

Witness as to Principal

Surety

(Address)

(Address)

(City, State, Zip)

(City, State, Zip)

ATTEST:

N.C. Resident Agent
(SEAL)

Witness as to Surety

(Address)

(City, State, Zip)

A certified and current copy of the Resident Agent's Power of Attorney must be included with this form

00310.3 | LIST OF SUBCONTRACTORS

In compliance with the Instructions to Bidders and the Supplementary Conditions, the undersigned submits the following names of Subcontractors to be used in performing the Work.

The Bidder certifies that all Subcontractors listed are eligible to perform the Work and that all Subcontractors performing more than five percent (5%) of the work are listed.

<u>Subcontractor's Work</u>	<u>Subcontractor's Name</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Bidder's Signature

00320.1 | BIDDER QUALIFICATIONS

NOTE: THIS FORM MUST BE COMPLETED AND INCLUDED WITH BID

The Fayetteville Public Works Commission (PWC) reserves the right to request information from the Contractor to complete its assessment of the Contractor or subcontractors qualifications. Partially complete forms may be considered non-responsive based on the quantity and quality of information provided. Wholly incomplete forms will be considered non-responsive and will result in rejection of the bid.

1. CONTRACTOR INFORMATION

<p>PRIME CONTRACTOR</p> <p>a) Name: _____</p> <p>b) License No: _____</p> <p>c) Within the last five (5) years, has the contractor been involved in any judgments, claims, or arbitration with regard to construction contracts? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, attach additional information and describe each event fully.</p> <p>d) Within the last five (5) years, has any officer or principal of the organization ever been an officer or principal of another organization when it failed to complete a construction contract? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, attach additional information and describe each event fully.</p> <p>Provide the names of the proposed Superintendent and Crew Leaders/Foremen who will be assigned to this project.</p> <p>Superintendent: _____ _____</p> <p>Crew Leaders/Foremen: _____ _____ _____</p>
--

2. CONTRACTOR EXPERIENCE

Use the provided **Contractor References form** (or copies of the form) to furnish the information listed below for the Prime Contractor. Additional projects may be attached to meet the qualification requirements.

PRIME CONTRACTOR

The Contractor shall include only those projects completed as a Prime Contractor. Any combination of project references may be listed such that the following conditions are met:

- a) At least **two (2)** of the Prime Contractor project references shall be **gravity sewer main construction projects** fully completed and accepted by Owner/Client in the last **five (5) years**.
 - (i) The sewer main project references shall be of similar pipe size, length, scope, nature, and/or cost to the Work described in these Contract Documents. Project references shall include the name of the project, owner or client name, owner or client contact including name of owner or client representative, phone number and email and project location.
 - (ii) At least one (1) of the sewer project references shall have been fully completed and accepted by Owner/Client within the last eighteen (18) months.
- b) At least **one (1)** of the Prime Contractor project references shall be an **aerial pipeline project fully completed** and accepted by Owner/Client in the last **five (5) years**.
 - (i) The aerial pipeline project referenced shall be for a conveyance pipeline of similar pipe size, length scope, nature, and/or cost to the Work described in these Contract Documents. Project references shall include the name of the project, owner or client name, owner or client contact including name of owner or client representative, phone number and email and project location.

CONTRACTOR REFERENCE	<input type="checkbox"/> Gravity Sewer Project	<input type="checkbox"/> Aerial Conveyance Pipe Project
Project Name:		Owner/Client Name:
Client Contact:		Client Email:
Client Phone:		Location:
Superintendent:	Start Date:	End Date:
Pipe Size/Material:	Length:	Cost:
Scope/Additional Information:		
CONTRACTOR REFERENCE	<input type="checkbox"/> Gravity Sewer Project	<input type="checkbox"/> Aerial Conveyance Pipe Project
Project Name:		Owner/Client Name:
Client Contact:		Client Email:
Client Phone:		Location:
Superintendent:	Start Date:	End Date:
Pipe Size/Material:	Length:	Cost:
Scope/Additional Information:		
CONTRACTOR REFERENCE	<input type="checkbox"/> Gravity Sewer Project	<input type="checkbox"/> Aerial Conveyance Pipe Project
Project Name:		Owner/Client Name:
Client Contact:		Client Email:
Client Phone:		Location:
Superintendent:	Start Date:	End Date:
Pipe Size/Material:	Length:	Cost:
Scope/Additional Information:		

3. BIDDER QUALIFICATIONS CERTIFICATION

The undersigned certifies that all information furnished as part of the Bidder Qualifications is true and accurate.

PWC may conduct such investigations/verifications as deemed necessary to establish the responsibility, qualification and financial ability of the Bidder. Should PWC adjudge that the apparent low bidder is not the lowest, responsive, responsible bidder by virtue of the information furnished as part of this Bidder Qualifications section, said apparent low bidder will be so notified and his bid shall be returned to him without prejudice. Failure or refusal to furnish any items of information requested by PWC shall be considered as non-responsive and therefore basis for rejection of the bid.

<i>Submitted By (print):</i>	<i>Date:</i>
<i>Title:</i>	
<i>Company:</i>	
<i>Signature:</i>	

00320.2 | NON-COLLUSIVE AFFIDAVIT

State of _____

County of _____

_____ Being first duly sworn deposes and says that:
(Name of Bidder's Authorized Signatory)

1) He/she is the _____ of
(Owner, Partner, Officer, Representative, or Agent)

_____ The BIDDER
that has submitted the attached BID;

- 2) He/she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;
- 3) Such Bid is genuine and is not a collusive or sham Bid;
- 4) Neither the said BIDDER nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other BIDDER, firm, or person to fix the price or prices in the attached BID or of any other BIDDER, or to fix any overhead, profit, cost elements of the BID price or the BID price of any other BIDDER, or secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the Fayetteville Public Works Commission, or any person interested in the proposed Contract;
- 5) The price or prices quoted in the attached BID are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the BIDDER or any other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

BY: _____

ITS _____
(Title)

Subscribed and sworn before me this _____ day of _____ 20_____.

_____ My Commission expires _____
(Notary Public)

00320.3 | NONDISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Contract that the parties hereto named, their agents, employees or servants will not discriminate in any manner on the basis of age, handicap, race, color, creed, sexual orientation or national origin with reference to the subject matter of this Contract, no matter how remote.

This provision being incorporated for the benefit of the Fayetteville Public Works Commission and its residents may be enforced as set out in said ordinances, enforcement of this provision shall be by action for specific performance, injunctive relief, or other remedy as by reference to the subject matter of this Contract.

(Use the following form for signatures by a CORPORATION):

Corporate Name

ATTEST:

(Assistant) Secretary

BY: _____
(Vice) President

(Printed Name)

(Printed Name)

(Corporate Seal)

(Use the following form for signatures by an INDIVIDUAL)

BY: _____

(Printed Name)

WITNESS:

(Printed Name)

00320.4 | EQUAL EMPLOYMENT OPPORTUNITY ACKNOWLEDGEMENT

During the performance of this Contract the Contractor agrees as follows:

- a. The Contractor will not discriminate against any employee or applicant because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Contractor agrees to post in conspicuous of the nondiscrimination clause.
- b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- c. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract understanding, a notice to be provided, advising the labor union or worker's representative of the Contractor's commitments under the Equal Employment Opportunity Section of this Contract, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further OWNER Contracts.
- e. The Contractor will include the provisions of the section in every subcontract or purchase order unless exempted by rules, regulations or orders of the OWNER so that such provisions will be binding upon each Subcontractor or vendor.

(Use the following form for signatures by a CORPORATION):

Corporate Name

ATTEST:

(Assistant) Secretary

BY: _____
Vice-President

(CORPORATE SEAL)

(Use the following form for signatures by an INDIVIDUAL):

BY: _____ (Seal)

WITNESS:

(THE ACKNOWLEDGEMENT OF THE ABOVE SIGNATURE MUST BE NOTARIZED USING THE FORM ON THE FOLLOWING PAGE)

(See the following form for acknowledgment signature by a Corporation):

NORTH CAROLINA

(Enter correct State and County if different than shown)

_____ COUNTY

I, _____, A Notary Public in and for the aforesaid State and County, certify that _____ personally appeared before me this day and acknowledged that he is (Asst.) Secretary of _____, a corporation, and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its (Vice) President, sealed with its corporate seal, and attested by himself as its (Asst.) Secretary.

WITNESS my hand and notarial seal this _____ day of _____, 20_____.

Notary Public

My commission expires _____.

(SEAL)

(Use the following form for acknowledgement signature by a partnership or an individual.)

NORTH CAROLINA

(Enter correct State and County if different than shown)

_____ COUNTY

I, the undersigned Notary Public, do hereby certify that _____ personally appeared before me this day and acknowledge the due execution of the foregoing instrument.

WITNESS my hand and notarial seal this _____ day of _____, 20_____.

Notary Public

My commission expires _____.

(SEAL)

00320.5 | AFFIDAVIT OF ORGANIZATION AND AUTHORITY SWORN STATEMENT

STATE OF _____

COUNTY OF _____

_____ being the first duly sworn on oath, deposes and says that the Bidder on the attached Bid Form is organized as indicated below and that all statements herein made are made on behalf of such Bidder and that this deponent is authorized to make them.

(Fill Out Applicable Paragraph)

1. CORPORATION

The bidder is a corporation organized and existing under the laws of the State of _____ and its President is _____, and its Secretary is _____, and does have a corporate seal. The _____ is authorized to sign construction Contract and Bids for the company by action of its Board of Directors taken _____, a certified copy of which is hereto attached. (Strike out last sentence if not applicable.)

2. PARTNERSHIP

The bidder is a Partnership consisting of _____ and _____, partners doing business under the name of _____.

3. SOLE TRADER

The bidder is an individual and if operating under a trade name, such trade name is as follows:

4. ADDRESS

The business address of the Bidder is as follows:

Its phone number is _____.

Bidder

By: _____

Subscribed and sworn before me this _____ day of _____, 20_____.

Notary Public County _____

My Commission Expires: _____

**00320.6 | CERTIFICATION OF REGARDING DEBARMENT,
SUSPENSION AND OTHER MATTERS**

The Primary Participant, _____ (major third party contractor), certifies to the best of its knowledge and belief, that it and its principals:

- 1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- 2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- 3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and
- 4. Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(If the primary participant is unable to certify to any of the statements in this certification, the participant shall attach an explanation to this certification.)

THE PRIMARY PARTICIPANT _____ CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET. SEQ. ARE APPLICABLE THERETO.

Signature

Title

Printed Name

Date

00320.7 | F.T.A. CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

(To be submitted with each bid or offer exceeding \$100,000)

The undersigned _____ certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq .)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

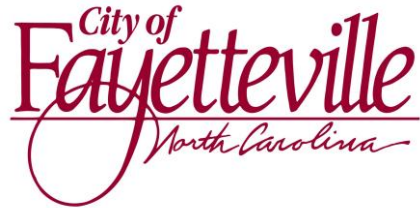
[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, et seq., apply to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized Official

_____ Date



**CITY OF FAYETTEVILLE
AND
PUBLIC WORKS COMMISSION OF THE
CITY OF FAYETTEVILLE
SMALL DISADVANTAGED BUSINESS
ENTERPRISE PROGRAM
FOR
CONSTRUCTION, PROCUREMENT, AND
PROFESSIONAL SERVICES**

**FAYETTEVILLE CITY COUNCIL
433 HAY STREET
FAYETTEVILLE, NORTH CAROLINA 28301**

SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

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SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

I. Applicability.

(a) This program shall apply to all construction and repair work involving the expenditure of City funds, regardless of the sources of other funds, in the amounts set forth in G.S. 143-129 and G.S. 143-131; this program shall also apply to the procurement of architectural, engineering and surveying services as outlined in G.S. 143-64.31. This program shall not apply to contracts established by the State or any agency of the State.

(b) If any section, subsection, clause or provision of this chapter, including those groups found to be presumptively socially disadvantaged, is held to be invalid by a court of competent jurisdiction, the remainder of the chapter shall not be affected by such invalidity.

II. Definitions.

As used in this part, the following terms shall have the following meanings:

Affiliation - One firm controls or has the power to control the other, or a third party or parties controls or has the power to control both, or an identity of interests exists between such firms. In determining whether firms are Affiliates, the City shall consider all appropriate factors, including common ownership, common management, and contractual relationships. Affiliates must be considered together in determining whether a firm is a Small Business Enterprise.

Bidder/Participant - Any person, firm, partnership, corporation, limited liability company, association or joint venture seeking to be awarded a public contract or subcontract.

Brokering - Filling orders by purchasing or receiving supplies from a third party supplier rather than out of existing inventory, and providing no Commercially Useful Function other than acting as a conduit between a supplier and a customer.

City - The awarding authority for contracts awarded by the City of Fayetteville and the City of Fayetteville Pubic Works Commission.

City's Marketplace - The geographic and procurement areas in which the City contracts on an annual basis.

Commercially Useful Function - Responsibility for the execution of a distinct element of the work of the contract which is carried out by actually performing, managing, and supervising the work involved, or fulfilling responsibilities as a joint venture.

Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment or services and obligating the buyer to pay for them, not including leases or emergency procurements.

Doing Business - Having a physical location from which to engage in for profit activities in the scope(s) of expertise of the firm.

Economically Disadvantaged - An individual whose Personal Net Worth is less than the amount identified in 49 CFR Part 26

Equipment - Materials, supplies, commodities and apparatuses.

Expertise - Demonstrated skills, knowledge, or ability to perform in the field of endeavor in which certification is sought by the firm as defined by normal industry practices, including licensure where required.

Good Faith Efforts - Actions undertaken by a Bidder/Participant to achieve a SDBE goal which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the Program's requirements.

Historically underutilized business (HUB) defined; statewide uniform certification (SWUC).

(a) As used in this Chapter, the term "historically underutilized business" means a business that meets all of the following conditions:

- (1) At least fifty-one percent (51%) of the business is owned by one or more persons who are members of at least one of the groups set forth in subsection (b) of this section, or in the case of a corporation, at least fifty-one percent (51%) of the stock is owned by one or more persons who are members of at least one of the groups set forth in subsection (b) of this section.
- (2) The management and daily business operations are controlled by one or more owners of the business who are members of at least one of the groups set forth in subsection (b) of this section.

(a1) As used in this Chapter, the term "minority business" means a historically underutilized business.

(b) To qualify as a historically underutilized business under this section, a business must be owned and controlled as set forth in subsection (a) of this section by one or more citizens or lawful permanent residents of the United States who are members of one or more of the following groups:

- (1) Black. - A person having origins in any of the black racial groups of Africa.
- (2) Hispanic. - A person of Spanish or Portuguese culture having origins in Mexico, South or Central America, or the Caribbean islands, regardless of race.
- (3) Asian American. - A person having origins in any of the original peoples of the Far East, Southeast Asia, Asia, Indian continent, or Pacific islands.
- (4) American Indian. - A person having origins in any of the original Indian peoples of North America.
- (5) Female.
- (6) Disabled. - A person with a disability as defined in G.S. 168-1 or G.S. 168A-3.
- (7) Disadvantaged. - A person who is socially and economically disadvantaged as defined in 15 U.S.C. § 637.

(c) In addition to the powers and duties provided in G.S. 143-49, the Secretary of Administration shall have the power, authority, and duty to:

- (1) Develop and administer a statewide uniform program for: (i) the certification of a historically underutilized business, as defined in this section, for use by State departments, agencies, and institutions, and political subdivisions of the State; and (ii) the creation and maintenance of a database of the businesses certified as historically underutilized businesses.
- (2) Adopt rules and procedures for the statewide uniform certification of historically underutilized businesses.
- (3) Provide for the certification of all businesses designated as historically underutilized businesses to be used by State departments, agencies, and institutions, and political subdivisions of the State.

(d) The Secretary of Administration shall seek input from State departments, agencies, and institutions, political subdivisions of the State, and any other entity deemed appropriate to determine the qualifications and criteria for statewide uniform certification of historically underutilized businesses.

(e) Only businesses certified in accordance with this section shall be considered by State departments, agencies, and institutions, and political subdivisions of the State as historically underutilized businesses for minority business participation purposes under this Chapter. (2005-270, s. 3; 2007-392, s. 4; 2009-243, s. 3.)

Joint Venture - An association of two or more persons, or any combination of types of business enterprises and persons numbering two or more, proposing to perform a single for profit business enterprise, in which each joint venture partner contributes property, capital, efforts, skill and knowledge, and in which the SDBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture is commensurate with its ownership interest. Joint ventures must have an agreement in writing specifying the terms and conditions of the relationships between the partners and their relationship and responsibility to the contract.

Managers - The City Manager and the Public Works Commission General Manager.

Manufacturer - A firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.

Personal Net Worth - The net value of the assets of an individual after total liabilities are deducted. An individual's Personal Net Worth does not include the individual's ownership interest in an applicant or the individual's equity in his or her primary place of residence. An individual's Personal Net Worth includes only his or her share of assets held jointly with the individual's spouse.

Program - The SDBE/HUB Program.

Project Specific Goal - The Goal established for a particular project or contract based upon the availability of SDBE/HUBs in the scopes of work of the Contract.

Regular Dealer - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a Regular Dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A firm may be a Regular Dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the firm both owns and operates distribution equipment for the products. Any supplementing of a Regular Dealer's distribution equipment shall be by a long-term lease agreement and not on an *ad hoc* or contract-by-contract basis. Packagers, manufacture representatives, or other persons who arrange or expedite transactions are not Regular Dealers.

Schedule of Participation - The list of SDBE/HUBs that the Bidder/Participant commits will be utilized, their scopes of the work, and dollar value or the percentage of the project they will perform.

Socially Disadvantaged - An individual who has been subjected to racial or ethnic prejudice or cultural bias within American society because of his or her identity as a member of a group and without regard to individual qualities. Social disadvantage must stem from circumstances beyond the individual's

control. A Socially Disadvantaged individual must be a citizen or lawfully admitted permanent resident of the United States who is either:

- (a) A person whose lifelong cultural and social affiliation is with one of the following groups, which are rebuttably presumed to be Socially Disadvantaged:
 - (i) Blacks/African - Americans (persons having origins in any of the Black racial groups of Africa);
 - (ii) Hispanic - Americans (persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race);
 - (iii) Native - Americans (persons having origins in the original groups of North America);
 - (iv) Asian - Americans (persons having origins in any of the original groups of the Far East, Southeast Asia, the islands of the Pacific or the Indian Subcontinent);
 - (v) Women; or
- (b) Any socially disadvantaged individual as defined by 15 U.S.C. 637.

Small Disadvantaged Business Enterprise (SDBE) - Means a business, including a sole proprietorship, partnership, corporation, limited liability company, joint venture or any other business or professional entity:

- (a) Which is at least 51 percent owned by one or more Socially and Economically Disadvantaged individuals, or in the case of a publicly owned business, at least 51 percent of all classes of the stock of which is owned by one or more Socially and Economically Disadvantaged individuals;
- (b) Whose management, policies, major decisions and daily business operations are independently managed and controlled by one or more such Socially and Economically Disadvantaged individuals;
- (c) Which is a Small Business Enterprise as defined by 13 CFR Part 121;
- (d) Which is Doing Business in the City's Marketplace; and
- (e) Which is certified as a SDBE by the City of Fayetteville.

SDBE Program Coordinator - The person designated by the Managers to administer the Program.

III. SDBE/HUB Program Administration.

The Coordinator shall administer the SDBE/HUB Program, which duties shall include:

- (a) Formulating, proposing, and implementing rules and regulations for the further development, implementation, and monitoring of the Program.

- (b) Informing SDBE/HUBs of City contracting opportunities through outreach activities.
- (c) Providing information and assistance to SDBE/HUBs relating to City procurement practices and procedures, and bid specifications, requirements, and prerequisites.
- (d) Certifying businesses as SDBEs, maintaining certification records, and ensuring that all City departments have current certification listings.
- (e) Establishing Project Specific Goals.
- (f) Evaluating Bidder/Participant's achievement of Project Specific Goals or Good Faith Efforts to meet Project Specific Goals.
- (g) Working with City departments to monitor Contracts to ensure prompt payments to SDBE/HUBs, compliance with Project Specific Goals and commitments and the Program's operations and objectives.
- (h) Receiving, reviewing, and acting upon complaints and suggestions concerning the Program.
- (i) Collecting data to evaluate the Program.
- (j) Monitoring the Program and reporting to the Managers, the Mayor and the City Council on the administration and operations of the Program.

IV. Race- and Gender-Neutral Measures to Ensure Equal Opportunities for All Bidders/Participants.

The City shall develop and use measures to facilitate the participation of all firms in City contracting activities. These measures shall include, but are not limited to:

- (a) Arranging solicitation times for the presentations of bidding opportunities, which includes quantities, specifications and delivery schedules so as to facilitate the participation of interested firms.
- (b) Dividing requests for bids or proposals into work elements to facilitate the participation of small firms.
- (c) Providing timely information on specific contracting opportunities, contracting procedures, and bid preparation.
- (d) Holding pre-bid conferences, where appropriate, to explain the projects.
- (e) Enforcing prompt payment requirements and procedures, including requiring by contract that prime contractors promptly pay subcontractors.
- (f) Reviewing bonding and insurance requirements to eliminate unnecessary barriers to contracting with the City.

- (g) Maintaining information on all firms bidding on City prime contracts and subcontracts.

V. SDBE/HUB Program Eligibility.

- (a) Only businesses that meet the criteria of SDBE/HUB may participate in the Program.
- (b) The City shall apply the certification criteria and procedures of 49 CFR Part 26 and NCGS 143-128.4 for participation in the Program.
- (c) The City shall certify the eligibility of joint ventures involving SDBEs and non-SDBEs.
- (d) In lieu of conducting its own certifications, the Coordinator may accept formal certifications by other entities as meeting the requirements of the Program, if the eligibility standards of such entities are comparable to those of the City. Certification decisions, including decertification and graduation determinations, by those other entities shall be accepted by the City in its discretion.
- (e) It is the responsibility of the SDBE/HUB to notify the Coordinator of any change in its circumstances affecting its continued eligibility for the Program. Failure to do so may result in the firm's decertification.
- (f) A SDBE/HUB may be decertified if it submitted inaccurate, false, or incomplete information to the City or failed to comply with requirements of a contract with the City or with the requirements of the Program.
- (g) A third party may challenge the eligibility of a certified firm:
 - (1) The challenge shall be made in writing under oath and shall include all information relied upon by the challenging party.
 - (2) The Coordinator shall provide an opportunity to the parties for an informal hearing. The parties may appear and provide documentation or other evidence and be represented by counsel.
 - (3) The Coordinator shall render a written decision within 15 days of the hearing.
 - (4) If the Coordinator determines that the firm is not eligible, it may appeal the determination to the Manager in writing within 7 days of receipt of the written decision. The challenging party shall have no right of appeal from the Coordinator's determination.
 - (5) The Manager shall issue a written decision within 15 days of receipt of the appeal. The Manager's determination shall be final.
- (h) A firm that has been decertified may not reapply for certification for one year from the effective date of its decertification.

VI. SDBE/HUB Goal Setting.

The Coordinator shall establish a Project Specific Goal for appropriate Contracts based on normal industry practice as determined in consultation with the appropriate Department, the availability of SDBE/HUBs to perform the functions of the Contracts and the City's utilization of SDBE/HUBs to date.

VII. Counting Participation of SDBE/HUBs.

(a) The entire amount of that portion of a construction Contract that is performed by the SDBE's own forces shall be counted, including the cost of equipment obtained by the SDBE/HUB for the work of the Contract, and equipment purchased or leased by the SDBE/HUB (except equipment the SDBE subcontractor or Joint Venture partner purchases or leases from the prime contractor or its Affiliate).

(b) The entire amount of fees or commissions charged by a SDBE/HUB for providing a *bona fide* service, such as professional, technical, consultant or managerial services, or for providing bonds or insurance specifically required for the performance of the Contract, shall be counted, provided the fee is reasonable and not excessive as compared with fees customarily charged for similar services.

(c) When a SDBE/HUB performs as a participant in a Joint Venture, only the portion of the total dollar value of the Contract equal to the distinct, clearly defined portion of the work of the Joint Venture's Contract that the SDBE/HUB performs with its own forces and for which it is separately at risk shall be counted.

(d) Only expenditures to a SDBE/HUB that is performing a Commercially Useful Function shall be counted. To determine whether a firm is performing a Commercially Useful Function, the City will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the Contract is commensurate with the work it is actually performing and other relevant factors. To perform a Commercially Useful Function, the SDBE/HUB must be responsible, with respect to equipment used on the Contract, for negotiating price, determining quality and quantity, ordering the material, installing (where applicable) and paying for the material itself. A SDBE/HUB does not perform a Commercially Useful Function if its role is limited to that of an extra participant in the Contract through which funds are passed in order to obtain the appearance of SDBE/HUB participation. If a SDBE/HUB subcontracts a greater portion of the work of a Contract than would be expected on the basis of normal industry practice, it is presumed not to perform a Commercially Useful Function. When a SDBE/HUB is presumed not to be performing a Commercially Useful Function, the SDBE may present evidence to rebut this presumption.

(e) One hundred percent of the cost of the materials or supplies obtained from a SDBE Manufacturer or Regular Dealer shall be counted. One hundred percent of the fees or transportation charges for the delivery of materials or supplies required on a job site shall be counted only if the payment of such fees is a customary industry practice and are commensurate with fees customarily charged for similar services. The cost of the materials and supplies shall not be counted.

(f) If a firm is decertified during performance of a Contract, the dollar value of work performed under a Contract with that firm after it has been decertified shall not be counted.

(g) In determining achievement of a Project Specific Goal, the participation of a SDBE/HUB shall not be counted until that amount has been paid to the SDBE/HUB.

VIII. Procurement of Architectural, Engineering and Surveying Services (G.S. 143-64.31)

(a) The City shall use good faith efforts to notify minority firms of the opportunity to submit qualifications for architectural, engineering, surveying and construction management at risk services.

IX. Informal Construction and Repair Work (G.S. 143-131)

(a) The City shall solicit minority participation for construction and repair projects in the amount of five thousand dollars (\$5,000) or more, but less than three hundred thousand dollars (\$300,000). The City shall maintain a record of contractors solicited and shall document efforts to recruit minority business participation in these contracts.

X. Formal Construction and Repair Work (G.S. 143-129)

(a) For all solicitations, the Bidder/Participant shall submit a Schedule of Participation detailing all subcontractors from which the Bidder/Participant solicited bids or quotations, and if a Project Specific Goal has been established, its achievement of the Goal or its Good Faith Efforts to do so. The list of SDBEs provided by the City to a Bidder/Participant establishes the minimum universe from which a Bidder/Participant must solicit SDBE/HUBs. The Schedule of Participation shall be due at the time set out in the solicitation documents.

(b) Any agreement between a Bidder/Participant and a SDBE/HUB in which the Bidder/Participant requires that the SDBE not provide subcontracting quotations to other bidders/proposers is prohibited.

(c) SDBE/HUBs shall respond to relevant requests for quotations.

(d) Where the Bidder/Participant cannot achieve the Project Specific Goal, the Coordinator will determine whether the Bidder/Participant has made Good Faith Efforts. At a minimum, the Bidder/Participant must engage in the following Good Faith Efforts that total at least 50 points for the bid or proposal to be responsive.

- (1) Contacting SDBE/HUBs from the list provided by the City at least ten days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. The Bidder/Participant shall provide interested SDBE/HUBs with timely, adequate information about the plans, specifications, and requirements of the Contract to allow SDBE/HUBs to respond to the solicitation. The Bidder/Participant must follow up initial solicitations with interested SDBE/HUBs. 10 points.
- (2) Providing or making the construction plans, specifications, and requirements available for review by SDBE/HUBs at least ten days before the bid or proposals are due. 10 points.
- (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation. 15 points.
- (4) Working with SDBE/HUB, minority, women, trade, community or contractor organizations identified by the City in the bid documents that provide assistance in recruitment of SDBE/HUBs. 10 points.
- (5) Attending any prebid meetings scheduled by the City. 10 points.
- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. 20 points.
- (7) Negotiating in good faith with interested SDBE/HUBs and not rejecting them as unqualified without sound reasons based on their capabilities. Evidence of such

negotiation includes the names, addresses, and telephone numbers of SDBE/HUBs that were contacted; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and why agreements could not be reached with SDBE/HUBs. The Bidder/Participant may not reject SDBE/HUBs as being unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection of a SDBE/HUB based on price or lack of qualifications must be documented in writing. 15 points.

- (8) Providing assistance to an otherwise qualified SDBE/HUB in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting SDBE/HUBs in obtaining the same unit pricing with the bidder's suppliers in order to help minority SDBE/HUBs to establish credit. 25 points.
- (9) Negotiating joint venture and partnership arrangements with SDBEs to increase opportunities for SDBE/HUB participation. 20 points.
- (10) Providing quick pay agreements and policies to enable SDBE/HUBs to meet cash-flow demands. 20 points.

(e) In determining whether a Bidder/Participant has made Good Faith Efforts, the performance of other bidders/proposers in meeting the Project Specific Goal may be considered. For example, when the apparent successful Bidder/Participant fails to meet the Project Specific Goal but others meet it, it may be reasonably questioned whether, with additional reasonable efforts, the apparent successful Bidder/Participant could have met the Goal. Similarly, if the apparent successful Bidder/Participant fails to meet the Goal, but meets or exceeds the average SDBE participation obtained by other bidders/proposers, this may be evidence that the apparent successful Bidder/Participant made Good Faith Efforts.

(f) The Coordinator shall timely review the Schedule of Participation prior to award, including the scope of work and the letters of intent from SDBE/HUBs. The Coordinator may request clarification in writing of items listed in the Schedule of Participation, provided such clarification shall not include the opportunity to augment listed SDBE/HUB participation or Good Faith Efforts.

(g) The Schedule of Participation and supporting documents shall be reviewed by a Bid Selection Committee, composed of the operating departments, Purchasing Department, Coordinator and other representatives as appropriate. If the Bid Selection Committee initially determines the bid to be responsive, it shall recommend award of the Contract to the Managers. If the Bid Selection Committee determines the bid to be non-responsive, it shall confer with the City Attorney prior to recommending the rejection of the bid.

(h) A Bidder/Participant found to be non-responsive may appeal this determination pursuant to the City's bid protest procedures.

XI. Contract Performance Compliance Procedures.

(a) Upon award of a Contract by the City that includes a Project Specific Goal, the Goal becomes a covenant of performance by the Bidder/Participant in favor of the City.

(b) The Bidder/Participant shall provide a listing of all subcontractors to be used in the performance of the Contract, and subcontractor payment information to the City with each request for payment submitted to the City. The Coordinator and the operating department shall monitor subcontractor participation during the course of the Contract and shall have reasonable access to all Contract-related documentation held by the Bidder/Participant. The Bidder/Participant shall submit reports at such times and in such formats as requested by the City.

(c) The Bidder/Participant shall cooperate with the City in studies and surveys related to the Program.

(d) The Bidder/Participant cannot make changes to the Schedule of Participation or substitute subcontractors named in the Schedule of Participation without the prior written approval of the Coordinator. Unauthorized changes or substitutions shall be a violation of this program, and may constitute grounds for rejection of the bid or proposal or cause termination of the executed Contract for breach, the withholding of payment and/or subject the Bidder/Participant to Contract penalties or other sanctions.

- (1) All requests for changes or substitutions of the subcontractors named in the Schedule of Participation shall be made to the Coordinator in writing, and shall clearly and fully set forth the basis for the request. A Bidder/Participant shall not substitute a subcontractor or perform the work designated for a subcontractor with its own forces unless and until the Coordinator approves such substitution in writing.
- (2) The facts supporting the request must not have been known nor reasonably should have been known by either party prior to the submission of the Schedule of Participation. Bid shopping is prohibited.
- (3) Substitutions of the subcontractor shall be permitted only on the following basis:
 - (i) Unavailability after receipt of reasonable notice to proceed.
 - (ii) Failure of performance.
 - (iii) Financial incapacity.
 - (iv) Refusal by the subcontractor to honor the bid or proposal price.
 - (v) Mistake of fact or law about the elements of the scope of work of a solicitation where agreement upon a reasonable price cannot be reached.
 - (vi) Failure of the subcontractor to meet insurance, licensing, or bonding requirements; or
 - (vii) The subcontractor's withdrawal of its bid or proposal.
- (4) Where the Bidder/Participant has established the basis for the substitution to the satisfaction of the Coordinator, the Bidder/Participant shall make Good Faith Efforts to fulfill the Schedule of Participation if the Project Specific Goals will not otherwise be met. The Bidder/Participant may seek the assistance of the SDBE/HUB Office in obtaining a new SDBE/HUB subcontractor. If the Project Specific Goal cannot be

reached and Good Faith Efforts have been made, the Bidder/Participant may substitute with a non-SDBE/non-HUB.

DBE Directory <https://connect.ncdot.gov/business/SmallBusiness/>

HUB Directory <https://ncadmin.nc.gov/businesses/hub>

(e) If a Bidder/Participant plans to hire a subcontractor on any scope of work that was not previously disclosed in the Schedule of Participation, the Bidder/Participant shall obtain the approval of the Coordinator to modify the Schedule of Participation and must make Good Faith Efforts to ensure that SDBEs have a fair opportunity to bid on the new scope of work.

(f) The SDBE Compliance Committee, comprised of the Coordinator as the Chair and a representative from the Purchasing Department or any requested representative, shall be responsible for evaluating and reviewing issues and concerns concerning the Program, including whether a Bidder has complied with the Good Faith Efforts.

(g) If the Bidder/Participant is found to be in noncompliance with the Program or the Contract and fails to correct such noncompliance within ten working days after written notification, the City will withhold 5 percent of the amount of completed work on all monthly payments until the Bidder/Participant has come into compliance.

XII. Protest Procedure.

A Bidder/Participant may protest a decision regarding the implementation of the Program, including the determination that it has not made Good Faith Efforts, by filing a written grievance with supporting evidence with the Coordinator. The Coordinator shall provide a written response within ten working days of receipt of the grievance. The Bidder/Participant may appeal the Coordinator's determination in writing within ten working days of receipt to the Purchasing Director. The Director shall refer the grievance to the SDBE Compliance Committee, which shall hold a hearing and issue a written recommendation within ten working days. The Manager, upon receipt of the SDBE Compliance Committee's recommendation, shall make a final determination within ten working days.

XIII. Dispute Resolution.

Notwithstanding the protest procedures outlined above, mediation shall be required for all parties involved in a dispute under this program prior to initiating litigation concerning the dispute. The procedures for mediation shall be those adopted by City Council Resolution #2002-066 which is incorporated herein by reference as if fully set forth herein.

XIV. Penalties.

(a) Providing false or misleading information to the City in connection with an application for or challenge to certification, recertification or decertification as a SDBE/HUB, submission of a bid, responses to requests for qualifications or proposals, Good Faith Efforts documentation, post-award compliance, or other actions in violation of this program may render any bid award or contract void. A contract that is void under this section may continue in effect until an alternative can be arranged when immediate termination would result in harm to the public health or welfare.

(b) A Bidder/Participant is subject to withholding of payments under the Contract, termination of the Contract for breach, Contract penalties, decertification as a SBDE/HUB, or being barred or deemed non-responsive in future City solicitations and Contracts for up to two years, if it is found to have:

- (1) Provided false or misleading information in connection with the submission of a bid or proposal or documentation of Good Faith Efforts, post-award compliance, or other Program operations.
- (2) Failed in bad faith to fulfill the Project Specific Goal, thereby materially breaching the Contract.
- (4) Repeatedly failed to comply in good faith with substantive provisions of this program.

(c) The City reserves the right to pursue all remedies available in law or in equity for violations of this program.

XV. Program Review.

(a) The Managers, the Mayor, and the City Council shall receive an annual report from the Coordinator detailing the City's performance under the Program.

(b) The Managers, the Mayor, and the City Council will review this report, including the City's progress towards eliminating discrimination in its contracting activities and marketplace, and revise the Program as necessary to meet legal and Program requirements.

(c) If the Managers, the Mayor, and the City Council find that the objectives of the Program have been achieved, the City Council shall sunset the Program.

**CITY OF FAYETTEVILLE
AND
PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE
SDBE/HUB COMPLIANCE PROVISIONS**

SDBE/HUB CONTRACT PROVISIONS (VERTICAL CONSTRUCTION)

APPLICATION:

The requirements of the Small Disadvantaged Business Program for participation in the City of Fayetteville's construction contracts are hereby made a part of these contract documents. These requirements shall apply to all contracts regardless of ownership. Copies of the Program may be obtained from:

Public Works Commission
Procurement Department/Trent Ensley
P.O. Box 1089 Fayetteville, North Carolina 28302
Phone (910) 223-4333 Fax (910) 483-1429 e-mail: trent.ensley@faypwc.com

NCDOT DBE Directory: www.ebs.nc.gov/VendorDirectory
HUB Directory <https://ncadmin.nc.gov/businesses/hub>

SDBE COMPLIANCE REQUIREMENTS

1. The Bidder shall provide, **with the bid**, the SDBE CONTRACT PROVISIONS (CONSTRUCTION), properly executed which signifies that the Bidder understands and agrees to the incorporated SDBE contract provisions.
2. The Bidder shall provide **with the bid**:

Provide with Bid Form Proposal

Identification of SDBE/HUB Participation Form
AND
Affidavit A- Listing of Good Faith Efforts

OR

Identification of SDBE/HUB Participation Form
AND
Affidavit B- Intent to Self-Perform with Own Workforce

Provided Upon being named apparent low Bidder

Affidavit C- Percentage of SDBE/HUB Participation
OR
Affidavit D- Good Faith Efforts

All written statements, certifications or intentions made by the Bidder shall become a part of the agreement between the Contractor and the City of Fayetteville for performance of this contract. Failure to comply with any of these statements, certifications or intentions or with the SDBE compliance provisions shall constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the City of Fayetteville whether to terminate the contract for breach.

SUBCONTRACTOR PAYMENT REQUIREMENTS:

North Carolina General Statutes 143-134.1 (N.C.G.S.) states that the percentage of retainage on payments made by the prime contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the City of Fayetteville to the prime contractor. Failure to comply with this provision shall be considered a breach of the contract, and the contract may be terminated in accordance with the termination provisions of the contract.

The Contractor shall provide an itemized statement of payments to each SDBE subcontractor before final payment is processed.

The Contractor shall provide an itemized statement of payments to each NON- SDBE subcontractor before final payment is processed.

Date: _____

(Name of Company)

(Signature)

Attest: _____
(Above Name Typed or Printed)

(Title)

Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid

City of Fayetteville
Affidavit A - Listing of the Good Faith Efforts

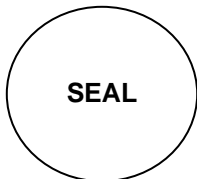
Affidavit of _____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked:
(A minimum of 50 value points must be checked in order to have achieved a "good faith effort")

- (1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. Value = Ten (10) points.
- (2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due. Value = Ten (10) points.
- (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation. Value = Fifteen (15) points.
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses. Value = Ten (10) points.
- (5) Attending any pre-bid meetings scheduled by the public owner. Value = Ten (10) points.
- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. Value = Twenty (20) points.
- (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing. Value = Fifteen (15) points.
- (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit. Value = Twenty-five (25) points.
- (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible. Value = Twenty (20) points.
- (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. Value = Twenty (20) points.

In accordance with GS143-128.2 (d) the undersigned will enter into a formal agreement with the firms listed in the Identification of Small Disadvantaged Business Participation schedule conditional upon execution of a contract with the Owner. Failure to abide by this statutory provision will constitute a breach of the contract. The undersigned hereby certifies that he or she has read the terms of the small disadvantaged business commitment and is authorized to bind the Bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of _____ 20____
Notary Public _____
My commission expires _____

**CITY OF FAYETTEVILLE
AND
PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE
SDBE/HUB COMPLIANCE PROVISIONS**

AFFIDAVIT B: Intent to Perform Contract with Own Workforce

Affidavit of _____
(Name of Bidder)

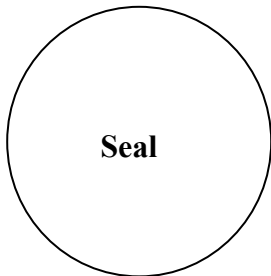
I hereby certify that it is our intent to perform 100% of the work required for the _____ contract. (Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements of the work** on this project with his/her own current work forces; and will complete all elements of this project **without** the use of subcontractors, material suppliers or providers of professional services.

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____



Signature: _____

Title: _____

State of North Carolina, County of _____
Subscribed and sworn to before me this ____ day of ____ 20__
Notary Public _____
My commission expires _____

THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL

CITY OF FAYETTEVILLE
AND
PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE
SDBE/HUB COMPLIANCE PROVISIONS
Apparent Low Bidder : AFFIDAVIT C

PORTION OF THE WORK TO BE PERFORMED BY SMALL DISADVANTAGED FIRMS

If the portion of the work to be executed by SDBE/HUB as defined in G.S. 143-128.2(g) is **equal to or greater than 10% of the Bidders total contract price**, then the Bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive Bidder within **72 hours** after notification of being low Bidder.

Affidavit of _____ I do certify that on the
(Name of Company)

\$

(Project Number)

(Dollar Amount of Total Bid)

I will expend a minimum of _____% of the total dollar amount of the contract with small disadvantaged business enterprises. SDBE's will be employed as subcontractors, vendors, or providers of professional services. Such work will be subcontracted to the following firms listed below.

Name, Address and Phone No.	*SDBE HUB Category	Description	Dollar Value	% of Contract

*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

*HUB Statewide Uniform Certification (SWUC)

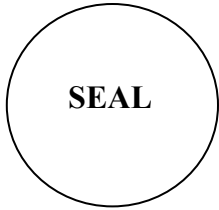
Pursuant to G.S. 143-128.2(d), the undersigned will enter into a formal agreement with small disadvantaged firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the Bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of North Carolina, County of _____
Subscribed and sworn to before me this ____ day of ____ 20__
Notary Public _____
My commission expires _____

THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL

**CITY OF FAYETTEVILLE
AND
PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE
SDBE/HUB COMPLIANCE PROVISIONS**

Apparent Low Bidder that did NOT meet the aspirational 10% goal: **AFFIDAVIT D**

Good Faith Efforts

If the goal of 10% participation by small disadvantaged businesses **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts.

Name, Address and Phone No.	*SDBE/HUB Category	Description	Dollar Value

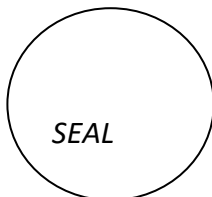
*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

*HUB Statewide Uniform Certification (SWUC)

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions. Examples of documentation shall include the following evidence:

- A. Copies of solicitations for quotes to small disadvantaged business firms. Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a small disadvantaged business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to small disadvantaged businesses, community or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster.
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for small disadvantaged businesses.
- H. Letter detailing reasons for rejection of a small disadvantaged business due to lack of qualification.
- I. Letter documenting proposed assistance offered to small disadvantaged businesses in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive Bidder.



Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

State of North Carolina, County of _____

Subscribed and sworn to before me this _____ day of _____ 20__

Notary Public _____

My commission expires _____

THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL

**CITY OF FAYETTEVILLE
AND
PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE
SDBE/HUB COMPLIANCE PROVISIONS**

SDBE/HUB DOCUMENTATION FOR CONTRACT PAYMENTS: AFFIDAVIT E

Prime Contractor: _____
Address & Phone: _____
Project Name: _____
Pay Application #: _____ Period: _____

The following is a list of payments to be made to small disadvantaged business contractors on this project for the above-mentioned period.

Firm Name and Address	*SDBE/HUB Category	Payment Amount	Owner Use Only

*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

*HUB Statewide Uniform Certification (SWUC)

Date: _____ Approved/Certified By: _____
Name
Title
Signature

****SUBCONTRACTOR DOCUMENTS:
MUST BE SUBMITTED WITH EACH PAY REQUEST & FINAL PAYMENT****

**CITY OF FAYETTEVILLE
AND
PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE
SDBE/HUB COMPLIANCE PROVISIONS**

Identification of Small Disadvantaged Business Participation

I, _____

(Name of Bidder)

do hereby certify that on this project, we will use the following small disadvantaged business enterprises as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone No.	Description	*SDBE/HUB Category

*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

*HUB Statewide Uniform Certification (SWUC)

The total value of small disadvantaged business contracting will be (\$) _____.

THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL

FAYETTEVILLE PUBLIC WORKS COMMISSION

Supplemental PWC Requirement: Subcontractor Disclosure Form

NON- SDBE/HUB DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments to be made to subcontractors on this project for the above-mentioned period.

Firm Name and Address	Payment Amount	Owner Use Only

Date: _____

Submitted By: _____

Name

Title

Signature

****SUBCONTRACTOR DOCUMENTS:
MUST BE SUBMITTED WITH EACH PAY REQUEST & FINAL PAYMENT****

00490.1 | NOTICE OF AWARD

TO _____

PROJECT DESCRIPTION: SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT

The OWNER 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, said Owner will be entitled to consider all your rights arising out of the OWNER's acceptance of your BID as abandoned and as a forfeiture of your Bid Bond. The Owner 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 the OWNER.

Dated this _____ day of _____, 20__

OWNER: FAYETTEVILLE PUBLIC WORKS COMMISSION

BY: _____
Trent Ensley
Procurement Manager

00490.2 | ACCEPTANCE OF AWARD

Receipt of the preceding NOTICE OF AWARD is hereby acknowledged this the _____
day of _____, 20__.

CONTRACTOR

By: _____

Title: _____

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 [REDACTED] (“Contractor”), a [REDACTED] (*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. Invitation to Bid
- c. Instructions to Bidders

- d. Procurement Schedule
- e. Bidder's completed Bid Forms (including but not limited to Technical Evaluation Criteria, Bid Proposal, Bid Summary, Bidder Agreement, and List of Subcontractors)
- f. Bidder Information
- g. FTA Certification Regarding Lobbying
- h. Definitions and Terminology
- i. General Conditions
- j. Certificate of Insurance
- k. Copy of General Contractor's License
- l. Notice of Award
- m. Acceptance of Award
- n. Performance Bond
- o. Payment Bond
- p. SDBE Program provisions and affidavits
- q. Notice to Proceed
- r. Supplemental General Conditions
- s. Technical Specifications
- t. Appendices

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:

- u. Notice to Proceed and Acceptance of Notice
- v. Work Change Directive(s)
- w. Change Order(s)
- x. 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 Shadowlawn Aerial Sewer Replacement, 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 [REDACTED], 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. Contractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance to complete the Project.

d. 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.

e. 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.

f. 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.

g. 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.

h. 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.

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

j. 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.

k. 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. 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.

18. 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.

19. 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.

20. 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.

21. 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]

22. 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.

23. 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

By: _____

(Printed Name) (Title)

Date: _____

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

00560 | NOTICE TO PROCEED

TO:

Date:

PROJECT: SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT

You are hereby notified to commence work in accordance with the Contract dated

_____, 20___, on the _____ day of _____ 20___, and you are to complete all work including restoration and all punch list items within 150 consecutive calendar days thereafter.

The date of final completion is _____.

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 _____, 20___.

CONTRACTOR

BY: _____

TITLE: _____

00570.1 | PERFORMANCE BOND

Date of Execution: _____

Name of Principal: _____

(Contractor)

Name of Surety: _____

Name of Contracting

Body: Fayetteville Public Works Commission, Fayetteville, N.C.

Amount of Bond: _____

PROJECT: SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT

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.

THIS BOND SHALL REMAIN in effect at least one year after the date when final payment became due, except as provided otherwise by Laws or Regulations or by the Contract Documents.

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 five (5) counter parts

Witness:

(Proprietorship of Partnership)

By:

Title:

(Corporate Secretary or
Assistant Secretary, Only)

CONTRACTOR:

(Trade or Corporate Name)

By:

Title:

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

(CORPORATE SEAL)

Witness:

Countersigned:

(N.C. Licensed Resident Agent)

SURETY COMPANY:

(Surety Company Name)

By:

Title:

(Attorney in Fact)

(SURETY CORPORATE SEAL)

00570.2 | PAYMENT BOND

Date of Execution: _____

Name of Principal: _____
(Contractor)

Name of Surety: _____

Name of Contracting

Body: Fayetteville Public Works Commission. , North Carolina

Amount of Bond: _____

PROJECT: SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT

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, for 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 promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said Contract, and 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.

THIS BOND SHALL REMAIN in effect at least one year after the date when final payment became due, except as provided otherwise by Laws or Regulations or by the Contract Documents.

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 five (5) counter parts

Witness:

CONTRACTOR:

(Proprietorship of Partnership)

(Trade or Corporate Name)

By:

By:

Title:

Title:

(Corporate Secretary or
Assistant Secretary, Only)

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

(CORPORATE SEAL)

Witness:

SURETY COMPANY:

(Surety Company Name)

By:

Countersigned:

Title:

(N.C. Licensed Resident Agent)

(Attorney in Fact)
(SURETY CORPORATE SEAL)

00600 | DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. The Following Terms will be used throughout these Contract Documents.

1. **Addenda** - Written or graphic instruments issued prior to the opening of Bids, which clarify, correct, or change the Bidding Requirements or the Contract Documents.
2. **Application for Payment** - The form acceptable to OWNER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
3. **Bid** - The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
4. **Bidder** - The person, firm, or corporation who submits a Bid for Work directly to OWNER.
5. **Bidding Documents** - The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
6. **Bidding Requirements** - The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.
7. **Bonds** – Bid, Performance, and Payment bonds and other instruments of security.
8. **Change In Work Delays** - Delays due to changes in the Work that alters the original scope of the Contract and impacts the critical path (delays the controlling operation).
9. **Change Order** - A document recommended by PROJECT ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Contract.
10. **Change Order Request (COR)** - A written document submitted by the CONTRACTOR requesting an adjustment to the Contract sum or an extension of the Contract time for approval by the OWNER.
11. **Claim** - A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
12. **Claim (Property Damage)** - Any form of injury or damage caused to the property, either personal or real due to the negligence of the CONTRACTOR as detailed by claimant.
13. **Contract** - The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
14. **Contract Documents** - Contract documents shall have the meaning set forth in the Construction Agreement.
15. **Contract Price** - The monies payable by OWNER to CONTRACTOR for completion of the Work in accordance with the CONTRACT and all executed Change Orders.
16. **Contract Time** - The number of days or the dates stated in the Contract to complete the Work so that it is ready for final payment as evidenced by PROJECT ENGINEER written recommendation of final payment.

17. **CONTRACTOR** - The individual or entity with whom OWNER has entered into the Contract.
18. **Critical Path** - The sequence of activities in the schedule for which an adjustment in the duration of any activity results in a corresponding adjustment in the overall schedule duration.
19. **Drawings** - The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by PROJECT ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.
20. **Day** - The word “day” shall constitute a calendar day of 24 hours measured from midnight to the next midnight.
21. **Defective** - The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to PROJECT ENGINEER recommendation of final payment.
22. **DESIGN ENGINEER** - The Engineering firm identified on the Contract Drawings and their duly authorized agents, such agents acting within the scope of the particular duties entrusted to them in each case.
23. **DESIGN ENGINEER's Consultant** - An individual or entity having a Contract with DESIGN ENGINEER to furnish services as DESIGN ENGINEER’s independent professional associate or consultant with respect to the Project.
24. **Effective Date of the Contract** - The date indicated in the Contract on which it becomes effective.
25. **Excusable Delay** – Any delay beyond the control and without the fault or negligence of CONTRACTOR caused by events or circumstances such as, but not limited to, acts of God or of public enemy, acts of government other than OWNER, fires, floods, epidemics, quarantine restrictions, freight embargoes, hurricanes, tornadoes, unusually severe weather.
26. **Free Haul Limit** – area within 2 miles of the project limits, one way.
27. **Hazardous Environmental Condition** - The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.
28. **Hazardous Waste** - The term Hazardous Waste shall have the meaning provided in the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
29. **Inexcusable Delay** - Any delay caused either by (A) events or circumstances within the control of CONTRACTOR, such as inadequate manpower, slow submittals, etc., which might have been avoided by the exercise of care, prudence, foresight, or diligence on the part of CONTRACTOR, or (B) labor disputes.
30. **Laws and/or Regulations** - Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
31. **Liens** - Charges, security interests, or encumbrances upon Project funds.
32. **Milestone** - A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Final Completion of all the Work.
33. **Notice of Award** - The written notice by OWNER to the bidder stating that upon timely compliance by the successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Contract.

34. **Notice to Proceed** - A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.
35. **Non Compliance Notice (NCN)** – A written notice given by the OWNER to CONTRACTOR indicting a violation in Contract Terms.
36. **OWNER** - The public entity with whom CONTRACTOR has entered into the Contract and for whom the Work is to be provided. OWNER is the Fayetteville Public Works Commission and is referred to throughout the Contract Documents as PWC, Fayetteville Public Works Commission, and/or Owner..
37. **Partial Utilization** - Use by OWNER of a completed part of the Work for the purpose for which it is intended (or a related purpose) prior to completion of all the Work.
38. **OWNER’s Consultant** - An individual or entity having a Contract with the OWNER to furnish services as the OWNER’s independent professional associate or consultant with respect to the Project.
39. **Project** - The Work to be performed under the Contract Documents.
40. **PROJECT COORDINATOR** - The authorized representative of PROJECT ENGINEER who may be assigned to the Site or any part thereof.
41. **PROJECT ENGINEER** - Person assigned by OWNER, to coordinate, manage, monitor, and shall administer the construction program working with DESIGN ENGINEER on engineering questions concerning the Project. The PROJECT ENGINEER has the authority to approve any changes in scope of Work.
42. **Recovery** - Documentation submitted by the CONTRACTOR describing when a project is anticipated be completed to include revisions to schedule and additional workforce.
43. **Request for Information (RFI)** - A written document from the CONTRACTOR to the PROJECT ENGINEER requesting clarification or information concerning the Contract Documents and/or the Contract Drawings.
44. **Request for Proposal (RFP)** - A written document from the OWNER requesting the CONTRACTOR submit a proposal for work outside the scope of the Contract and its provisions.
45. **Samples** - Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
46. **Shop Drawings/Submittals** - All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.
47. **Site** - Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.
48. **Specifications** - That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.
49. **Subcontractor** - An individual or entity having a direct Contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.
50. **Special Provisions** - That part of the Contract Documents which amends or supplements the Contract Documents.

51. **Supplier** - A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct Contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.
52. **Underground Facilities** - All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
53. **Weather Delays** - Delays that affect the standard daily production of the contract 50% or more as established by the submitted baseline schedule, or the accepted amended schedule.
54. **Work** - 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, 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.
55. **Work Change Directive** - Work initiated in the field affecting Contract Price and/or Contract Times. The PROJECT COORDINATOR and/or PROJECT ENGINEER may give CONTRACTOR a directive to proceed with Work which shall be included in a subsequent Change Order.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms “as allowed,” “as approved,” or terms of like effect or import are used, or the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination PROJECT ENGINEER as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to PROJECT ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of the Contract Documents.

B. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, “provide” is implied.

- C. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

**DIVISION 1
GENERAL REQUIREMENTS
00700 – GENERAL CONDITIONS****PART 1. PRELIMINARY MATTERS****1.01** Scope of Work

- A. The Contractor shall furnish all implements, machinery, tools, equipment, materials, labor, and all other incidentals necessary to perform the Work as required under the terms of these Contract Documents.

1.02 Performance and Payment Bonds

- A. 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 Price as security for the faithful performance of the Contract and as security for the payment of all persons performing labor and furnishing materials and equipment in connection with the Contract in accordance with N.C.G.S. Chapter 44A, Article 3.
- B. The corporate surety furnishing the bonds shall be authorized to do business in the state of North Carolina. All contract payment bonds and contract performance bonds shall be executed on “Performance Bond” and “Payment Bond” forms provided in the Contract Documents (or attached thereto) and be countersigned by a regularly authorized agent of the corporate surety who is resident in North Carolina and who is licensed by the North Carolina Department of Insurance.
- C. 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 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.

1.03 Insurance

- A. The insurance required for this contract is as follows:
1. 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.
 2. 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.
 3. 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 Workers' Compensation Statute, the Contractor shall provide adequate coverage for the protection of employees not otherwise protected.

4. 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 the Fayetteville, Public Works Commission, 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 the Fayetteville Public Works Commission.
5. 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.
6. 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. Owner'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, an Owner's and Contractor's Protective Liability insurance policy for the Fayetteville Public Works Commission, with minimum limits of \$1,000,000 per occurrence/\$2,000,000 aggregate.

B. Acceptability of Insurance

All insurance policies shall be written by insurers authorized to do business in North Carolina and meet the conditions set forth in the Agreement and these General Conditions. PWC shall have the discretion to determine the acceptability of Contractor's Insurance.

C. Additional Provision

As an integral part of this agreement, Contractor agrees to purchase and maintain during the life of this contract contractual liability insurance in the amount required in the general liability insurance requirements and to furnish proper evidence thereof.

D. Other Provisions

1. Any deductible or self-insured retention must be declared to and approved by the Fayetteville Public Works Commission.
2. The policies are to contain, or be endorsed to contain, the following provisions:
 - a. Commercial General Liability Coverage
 - i. The Fayetteville Public Works Commission, 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 the Fayetteville Public Works Commission, its officials, employees or volunteers.

- ii. The Contractor's insurance coverage shall be primary insurance as respects the Fayetteville Public Works Commission, its officials, employees and volunteers. Any insurance or self-insurance maintained by the Fayetteville Public Works Commission, its officials, employees or volunteers shall be excess of Contractor's insurance and shall not contribute with it.
 - iii. 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.
- b. All Coverages
- i. 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) 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
Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Fayetteville Public Works Commission, its officials, employees, and volunteers. In the event the Fayetteville Public Works Commission is damaged by the failure of the Contractor to maintain such insurance and to so notify the Fayetteville Public Works Commission, the Contractor shall bear all reasonable costs properly attributable thereto.
- c. 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.
- d. No Waiver of Immunity
Any insurance coverage required by the terms of this contract shall not be deemed a contract of insurance purchased by the Fayetteville Public Works Commission nor a waiver of the Fayetteville Public Works Commission's immunity pursuant to NCGS 160A-485.

1.04 Copies of Documents

- A. OWNER shall furnish to CONTRACTOR up to five (5) copies of the Contract Documents.
- B. Additional copies will be furnished by the DESIGN ENGINEER upon request, at the cost of reproduction.

1.05 Commencement of Contract Times; Notice to Proceed

- A. The Contract Times will commence to run on the date specified in the issued Notice to Proceed.

1.06 Starting the Work

- A. CONTRACTOR shall start to perform the work on the date when the Contract Times commence to run as indicated on the Notice to Proceed. Failure to start work within fifteen (15) calendar days of the commencement of Contract time will be documented as a substantial violation of the Contract Provisions and the following action will be taken:
1. The OWNER will request in writing the CONTRACTOR mobilize personnel, equipment, and material within ten (10) calendar days.
 2. If the CONTRACTOR fails to mobilize as requested within the given timeframe, OWNER will consider the CONTRACTOR in violation of the agreement and terminate for cause in accordance with the provisions of the Contract.
 3. If the CONTRACTOR mobilizes, they shall be required to submit a Recovery Plan detailing the intent to regain any lost time to date and finish the Project by the Final Completion date as listed in the specified time frame detailed in the Contract. This Recovery Plan shall include a new progress schedule and any additional subcontractor submissions for approval.

1.07 Before Starting Construction

- A. CONTRACTOR's Review of Contract Documents: Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to PROJECT ENGINEER any conflict, error, ambiguity, or discrepancy, which CONTRACTOR may discover. The PROJECT ENGINEER shall obtain a written interpretation or clarification from DESIGN ENGINEER and provide CONTRACTOR written clarification. CONTRACTOR cannot proceed until a written response is received. However, CONTRACTOR shall not be liable to the OWNER, PROJECT ENGINEER, or DESIGN ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.
- B. Interpretations of Contract Documents: On all plans, drawings, etc., the figured dimensions shall govern in case of any discrepancy between the scales and figures. The Contractor shall take no advantage of any error or omission in the Plans or of any discrepancy between the Plans and Specifications, and the PROJECT ENGINEER shall make any such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the Specifications and of the Plans as construed by him, and any decision by PROJECT ENGINEER shall be final.
- C. Schedules: Five (5) business days prior to the pre-construction conference, CONTRACTOR shall submit to PROJECT ENGINEER schedules as outlined in Section 01310 within these Contract Documents.
- D. Shop Drawings and Samples: Requirements regarding Shop Drawings and Samples as well as submittal procedures are covered under Section 01300 within these Contract Documents.

1.08 Pre-construction Conference

- A. Prior to commencement of Work at the site, a pre-construction conference attended by OWNER, CONTRACTOR, DESIGN ENGINEER, PROJECT ENGINEER, and others shall be held. The OWNER will contact the CONTRACTOR to establish a mutually agreeable date and time to conduct the conference. The purpose of the conference is to discuss general project items, including, but not limited to:
1. CONTRACTOR's responsible person and contact information

2. Emergency contact information
3. Submittal schedule
4. Contract issues
5. Safety
6. Project schedule
7. Progress Meetings
8. Sales Tax Certificate/Pay Applications
9. Warranty requirements
10. Site restoration and clean-up

1.09 Quality of Materials

- A. The source of supply of each of the materials shall be approved by the PROJECT ENGINEER before delivery is started. Representative preliminary samples of the character and quality herein described shall be submitted by the CONTRACTOR when indicated or directed, for examination or test; and written approval of the quality of such materials from the respective sources of supply. Only materials conforming to the requirements of these Contract Documents shall be used in the Work. All materials proposed to be used may be inspected at any time during progress of the preparation and use. All materials shall be approved before being incorporated in the Work.

PART 2. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

2.01 Intent

- A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
- B. The approved Drawings and Technical Specifications will show the location, details, and dimensions of the Work, which shall be performed in strict accordance therewith. Any deviation from the Contract Documents will be determined by the PROJECT ENGINEER and authorized in writing.
- C. Any labor, documentation, services, materials, or equipment that is required to produce the intended result shall be provided, whether or not specifically called for, at no additional cost to OWNER.
- D. Should any construction or conditions which are not covered by these Contract Documents be required for any proposed Work, "Special Conditions" for such Work will be provided to the CONTRACTOR and shall be considered a part of these Contract Documents the same as though printed fully herein. Should any such special provisions or requirements conflict with these Contract Documents, the "Special Conditions" shall take precedence.

2.02 Reference Standards

- A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
2. No provisions of any such standard, specification, manual, code, or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR, PROJECT ENGINEER or DESIGN ENGINEER, or any of their Subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, PROJECT ENGINEER or DESIGN ENGINEER, or any other of PROJECT ENGINEER or DESIGN ENGINEER's consultants, agents, or employees any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

2.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to PROJECT ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by Part 4) until an amendment or supplement to the Contract Documents has been issued; provided, however, that CONTRACTOR shall not be liable to OWNER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the Special Provisions of these Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. The provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. The provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).
2. Order of Precedence: If conflicts occur between the Technical Specifications, Details, and Drawings, the Technical Specification shall supersede.

2.04 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:
 1. Addendum, or

2. Change Order.
- B. The requirements of the Contract Documents may be supplemented and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
1. PROJECT ENGINEER's approval of a Shop Drawing or Sample; or
 2. PROJECT ENGINEER's written interpretation or clarification.
- C. If CONTRACTOR believes that any variation or deviation authorized under this Paragraph entitles CONTRACTOR to an adjustment in Contract Price or Contract Time, it is CONTRACTOR's obligation to provide written notice to PROJECT ENGINEER in accordance with Parts 9 and 10 prior to proceeding with the work covered by the variation or deviation.

2.05 Reuse of Documents

- A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect Contract with OWNER:
1. shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of DESIGN ENGINEER, DESIGN ENGINEER's Consultant, or PROJECT ENGINEER, including electronic media editions; and
 2. shall not reuse any Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and specific written verification or adaptation by DESIGN ENGINEER. This prohibition shall survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

PART 3. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

3.01 Availability of Lands

- A. The Contract Documents contains a list of easement special conditions that the Contractor shall comply with. OWNER shall be responsible for obtaining all required easements and encroachments necessary to complete the Work, except as provided herein. If there is any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim as provided in Part 8.
- B. Upon written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Any and all agreements between the Contractor and individual property owners shall not obligate the City of Fayetteville, Fayetteville Public Works Commission, or the DESIGN ENGINEER. Prior to performing any work on private property, acting on behalf of the Owner, the Contractor shall furnish to the Project Engineer a signed and notarized statement executed by the Property Owner acknowledging the Owner, and Design Engineer are not liable for any agreements between the Property Owner and the Contractor. The document shall hold harmless and defend the Owner and Design Engineer from all claims, damages, etc. The Agreement shall be in a format and content approved by the Project Engineer. All actions by Sub-Contractors shall be the Contractor's

responsibility to secure a Property Owner's Agreement as described herein. At the completion of the project, the Contractor shall obtain a signed release from the Property Owner for satisfactory completion and restoration prior to issuance of final payment.

- D. The Contractor(s) and all his subcontractors shall exercise extreme care to avoid damage to residents' private property. Should any such damage to residents' private property occur, it is the Contractor(s)' responsibility to notify the Project Engineer, in writing and on the actual date that the damage occurs, as to the extent of the damage and the Contractor(s) written plan to correct same. Contractor(s) written plan to correct damage shall include a timely settlement date. If Contractor(s) fails to timely correct damage to residents' private property, the Owner reserves the right to withhold progress payments until damage is corrected and/or to correct damage and back-charge Contractor(s) for costs incurred.

3.02 Subsurface and Physical Conditions

- A. These Contract Documents include:
1. Reports of explorations and tests of subsurface conditions at or contiguous to the Site that the DESIGN ENGINEER has used in preparing the Contract Documents.
 2. Drawings of physical conditions relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that DESIGN ENGINEER has used in preparing the Contract Documents.
- B. CONTRACTOR may rely upon the general accuracy of these reports and drawings containing subsurface conditions. However, these documents do not take precedence over the Contract Documents. CONTRACTOR may not rely upon or make any Claim against OWNER, DESIGN ENGINEER, or any of DESIGN ENGINEER's Consultants with respect to:
1. The completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or
 2. Other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. Any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

3.03 Differing Subsurface or Physical Conditions

- A. If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is discovered either:
1. Is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in these Contract Documents is materially inaccurate; or
 2. Is of such a nature as to require a change in the Contract Documents; or
 3. Differs materially from that shown or indicated in the Contract Documents; or
 4. Is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract

Documents;

then CONTRACTOR shall, immediately after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Part 4), notify PROJECT ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith until receipt of written order to do so.

- B. Upon receipt of CONTRACTOR's written notice, PROJECT ENGINEER will review the pertinent condition, determine the necessity of obtaining additional information and advise CONTRACTOR in writing.
- C. Possible Price and Time Adjustments
1. The Price and/or Contract Time may be adjusted if the PROJECT ENGINEER determines that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, to the following:
 - a. Such condition must meet any one or more of the categories described in this Part 3; and
 - b. Any adjustment in Price and/or Contract Time shall be subject to the provisions of these Contract Documents.
 2. CONTRACTOR shall not be entitled to any adjustment in the Price or Contract Time as a result of differing subsurface or physical conditions if:
 - a. CONTRACTOR knew of the existence of such conditions at the time of submission of a Bid or becoming bound under a negotiated Contract; or
 - b. The existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to submission of a bid; or
 - c. CONTRACTOR failed to give the written notice within the time and as required by these Contract Documents.
 3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Price or Contract Time, as a result of differing subsurface or physical conditions or both, a Claim may be made therefore as provided in Part 8. No claim of CONTRACTOR under this paragraph shall be allowed unless;
 - a. CONTRACTOR has given the written noticed required in this Part 3; and
 - b. CONTRACTOR submits to PROJECT ENGINEER a detailed claim setting forth CONTRACTOR's right to recover any additional costs and lost time, including the information required by Part 10. However, OWNER, PROJECT ENGINEER, DESIGN ENGINEER, DESIGN ENGINEER's Consultants, and OWNER'S Consultants, shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, or other

dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project

3.04 Underground Facilities

A. EXISTING UTILITIES

The Contractor shall locate existing underground utilities in the areas of work. If utilities are to remain in place, the Contractor shall provide protection during construction operations. Additionally, the Contractor will coordinate with utility companies when working in close proximity to their line/services.

Should uncharted or incorrectly charted piping or other utilities be encountered during excavations, the Contractor shall immediately consult the Project Engineer for directions as how to proceed. The Contractor shall fully cooperate with Owner and utility companies in keeping respective services and facilities in operation.

The Owner has, to the best of its ability, made involved utility owners aware of this project. As appropriate, each utility owner will be invited to attend the preconstruction conference to discuss potential conflicts and schedules for relocation where required. All adjustments or relocations will be made at the utility owner's expense unless otherwise indicated in these Contract Documents.

Reasonable care has been used to locate and depict existing underground installation on the construction drawings, but the accuracy cannot be guaranteed and some items may not be shown which exist.

The Contractor shall adhere to the provisions of the 1985 Underground Damage Prevention Act, North Carolina General Statutes, 887 Chapter 785, Senate Bill 168, Article 3. The Contractor shall contact the NC One Call System for locates prior to beginning work in a particular area. For calls originating within North Carolina, the number is 811 or 1-800-632-4949. For calls originating outside of North Carolina, the number is (919) 855-5760. To check the status of a locate ticket the number is 1-877-632-5050. The Contractor shall include the cost of any coordination and cooperation for utilities in his bid.

Actual horizontal and vertical locations have not been verified. As part of the Contract work, the Contractor is required to dig up each utility which may conflict with construction in advance to verify locations. The utilities shall be "dug up" a minimum of fourteen (14) working days in advance of actual installation of new utilities to allow the Project Engineer an opportunity to adjust grades, alignments, etc., to avoid a conflict. Separate payment will not be made to physically verify the utility locations.

If the Contractor fails to schedule locates or perform advance physical locations in advance of the construction and a conflict arises, the Contractor will be required to make corrective measures as instructed by the Project Engineer at the Contractor's expense. The Contractor's failure to advance plan (minimum fourteen (14) working days) by physically uncovering existing utilities in advance of construction shall not be cause for claim of lost time or for additional compensation. No additional payment will be made for re-mobilization required by the utility locator.

When the Contractor's controlling operations are halted due to the failure of a utility owner to relocate or adjust a utility after being properly notified by the Contractor, the contract period may be extended by the amount of time the Contractor's controlling operations have been delayed while awaiting the relocation or adjustment. Contractor shall proceed with work in areas not affected by the relocation or adjustment delay.

The Owner, Project Engineer, Design Engineer, and/or Consultants shall not be liable to the Contractor for any claims, costs, losses, or damages incurred or sustained on or in connection with locating existing underground installations.

- B. The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or DESIGN ENGINEER by the owners of such Underground Facilities, unless it is otherwise provided.
- C. OWNER, PROJECT ENGINEER, OWNER's Consultant and DESIGN ENGINEER shall not be responsible for the accuracy or completeness of any such information or data.
- D. The cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:
1. Reviewing and checking all such information and data,
 2. Locating all Underground Facilities shown or indicated in the Contract Documents,
 3. Coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and
 4. The safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- E. CONTRACTOR shall be responsible for the discovery of existing underground installations, in advance of excavating or trenching as required in these Contract Documents.
- F. If an Underground Facility is discovered at or contiguous to the Site which was not shown or indicated, in the Contract Documents, CONTRACTOR shall, immediately after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Part 4), identify the owner of such Underground Facility and give written notice to PROJECT ENGINEER. Upon receipt of written notice PROJECT ENGINEER will review the pertinent condition, determine the necessity of obtaining additional information, and notify CONTRACTOR in writing. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility. If PROJECT ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued.
- The Contract Price and/or the Contract Time, may be adjusted if PROJECT ENGINEER determines the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject to the following:
1. Facility was not shown or indicated in the Contract Documents, and
 2. The CONTRACTOR did not know of or could not anticipate the facility.
- G. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, as a result of differing subsurface or physical conditions or both, a Claim may be made therefore as provided in Part 3. No claim of CONTRACTOR under this paragraph shall be allowed unless;
1. CONTRACTOR has given the written notice required in Part 3, and;
 2. CONTRACTOR submits to PROJECT ENGINEER a detailed claim setting forth CONTRACTOR's right to recover any additional costs and lost time, including the information required by Part 10 of these General Conditions.

However, OWNER, PROJECT ENGINEER, DESIGN ENGINEER, OWNER'S CONSULTANTS, and DESIGN ENGINEER's Consultants, shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project."

3.05 Reference Points

- A. Construction staking will be performed by the DESIGN ENGINEER who will also prepare and furnish construction cut sheets to the OWNER and CONTRACTOR. The CONTRACTOR shall not install any utilities without a cut sheet. All requests for staking will be made not less than 96 hours in advance.
- B. The Contractor shall be responsible for the preservation of all stakes and marks established by the DESIGN ENGINEER. CONTRACTOR shall report to PROJECT ENGINEER whenever any reference point or property monument is lost or destroyed or, requires relocation or reinstallation. If any of the stakes, marks, or property corners are carelessly or willfully disturbed, the cost of replacing them shall be charged against the CONTRACTOR by the DESIGN ENGINEER.
- C. Utilities shall be installed at the locations and elevations indicated on the Contract drawings unless otherwise approved by the OWNER. The CONTRACTOR shall verify invert elevations by instrument at each manhole.

3.06 Hazardous Environmental Condition at Site

- A. CONTRACTOR shall not resume Work in any affected area until OWNER has provided written notice:
 - 1. Specifying that any affected area is safe for the resumption of Work; or
 - 2. Specifying that any special conditions under which such Work may be resumed safely.

If after receipt of written notice, CONTRACTOR does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume work under the special conditions, then OWNER may order the portion of the Work that is in the area affected by the condition to be deleted from the Work. If OWNER and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price and/or Contract Time, or both, as a result of such Work stoppage, or such special conditions under which Work is agreed to be resumed by CONTRACTOR, then either party may make a Claim, or deleting that portion of the Work, therefore as provided in Part 8.

- B. CONTRACTOR may rely upon the general accuracy of these reports and drawings containing subsurface conditions. However, these documents do not take precedence over the Contract Documents. CONTRACTOR may not rely upon or make any Claim against OWNER, DESIGN ENGINEER, or any of DESIGN ENGINEER's Consultants with respect to:
 - 1. The completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or
 - 2. Other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. Any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.
- C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or discovered at the site which was not shown or indicated in Contract Documents. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.
- D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately:
1. secure such condition;
 2. stop all Work in connection with such condition and in any area affected (except in an emergency as required by Part 4); and
 3. Notify PROJECT ENGINEER (and confirm such notice in writing within 24 hours of initial notification).
- E. CONTRACTOR shall not resume Work in any affected area until OWNER has provided written notice:
1. Specifying that any affected area is safe for the resumption of Work; or
 2. Specifying that any special conditions under which such Work may be resumed safely.
- If after receipt of written notice, CONTRACTOR does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume work under the special conditions, then OWNER may order the portion of the Work that is in the area affected by the condition to be deleted from the Work. If OWNER and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price and/or Contract Time, or both, as a result of such Work stoppage, or such special conditions under which Work is agreed to be resumed by CONTRACTOR, then either party may make a Claim, or deleting that portion of the Work, therefore as provided in Part 8.
- F. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefore as provided in Part 8. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Part 5.
- G. To the fullest extent permitted by Laws and Regulations, OWNER shall, indemnify and hold harmless CONTRACTOR, Subcontractors, DESIGN ENGINEER, OWNER's DESIGN Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition:
1. was not or identified in the Contract Documents to be included within the scope of the Work, and

2. was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible.

Nothing in this paragraph shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, DESIGN ENGINEER, DESIGN ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph shall obligate CONTRACTOR to indemnify any individual or CONTRACTOR entity from and against the consequences of that individual's or entity's own negligence.

PART 4. CONTRACTOR'S RESPONSIBILITIES

4.01 Supervision and Superintendence

- A. Superintendent:
 1. The CONTRACTOR shall designate a full time competent superintendent, satisfactory to the PROJECT ENGINEER, to supervise the Work and to respond to the PROJECT ENGINEER concerning the OWNER's interest in the construction.
 2. The Superintendent shall have full authority to act on behalf of the CONTRACTOR and all communications, instructions, directions, and notices given to the Superintendent by the PROJECT ENGINEER shall be binding to the CONTRACTOR.
 3. The Superintendent shall give the Work his constant attention to facilitate the progress thereof and shall cooperate with the PROJECT ENGINEER in every way possible. The Superintendent shall at all times have a competent and reliable English-speaking representative on site, authorized to receive orders and act for him.
 4. If construction activity stops due to the Superintendent not being available or competent, the CONTRACTOR shall not have recourse against the OWNER.
 5. CONTRACTOR's Superintendent shall be responsible for coordination of the Work with other contractors or subcontractors onsite.
- B. Any Employee of or person associated with the CONTRACTOR shall not:
 1. Use profane or abusive language to any person, to the PROJECT ENGINEER or other employees of the OWNER, or;
 2. Interfere with the performance of the Work, or;
 3. Disobey instructions, or;
 4. Be careless, reckless or incompetent, or;
 5. Be objectionable to the OWNER.

Any employee of or person associated with the CONTRACTOR that fails to abide by the above conditions shall be removed from the project site on the request of the PROJECT ENGINEER, and shall not be allowed on the project site except with the PROJECT ENGINEER's written consent.

C. Subcontractors

1. The CONTRACTOR shall submit the names and references of both the Superintendent and all Sub-contractors to the PROJECT ENGINEER for approval prior to construction starting on the project. The CONTRACTOR shall not begin work until receiving written approval. If during the duration of the contract the CONTRACTOR changes Superintendent and Subcontractors, CONTRACTOR shall submit names and references to PROJECT ENGINEER for approval prior to new personnel starting work.
2. If the CONTRACTOR has a Subcontractor working under this Contract, the CONTRACTOR shall have a Superintendent on the site at all times. Construction activity shall be stopped if the CONTRACTOR's Superintendent is not on site.
3. The CONTRACTOR is and remains fully responsible for his own acts or omission as well as those of any subcontractors or any employee of either. The CONTRACTOR agrees that no contractual relationship exists between the Subcontractor and the OWNER in regard to the Contract, and that the subcontractor acts on his work as an agent or employee of the CONTRACTOR. The CONTRACTOR agrees to bind specifically every subcontractor to the applicable terms and conditions of these Contract Documents.

4.02 Labor; Working Hours

- A. This agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act. No CONTRACTOR or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person's basic rate of pay for all hours worked in excess of forty hours in such work week.
- B. CONTRACTOR shall employ only competent persons to do the Work and whenever OWNER shall notify CONTRACTOR, in writing, that any person on the Work appears incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with written consent of OWNER.
- C. CONTRACTOR and Subcontractors shall agree not to discriminate in the employment of labor because of race, creed, sex, religion or country of origin.

4.03 Prosecution of Work

- A. The CONTRACTOR shall undertake the Work with all necessary materials, equipment and labor to ensure its completion within the time set forth in the Contract. Should the CONTRACTOR choose to discontinue the Work he shall notify the OWNER in writing a minimum of three (3) business days in advance. The OWNER shall review and respond to the request in writing. If approved, the CONTRACTOR shall notify the OWNER in writing a minimum of 24 hours prior to the resuming operations.

4.04 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction

equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Contract Documents shall expressly run to the benefit of OWNER. If required by OWNER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.
- C. Workmanship shall be in accordance with these Contract Documents and shall be subject to the OWNER's approval.

4.05 Substitutes and "Or-Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, or the equipment is Base Bid equipment, other items of material or equipment of other Suppliers may be submitted (in accordance with Section 01300) to PROJECT ENGINEER for review.
 - 1. Or Equal Items – For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. In the exercise of reasonable judgment the PROJECT ENGINEER determines that:
 - i. it is equivalent to or better than the product named in form, function, performance, reliability, quality, features, materials of construction, operation and maintenance costs, static and dynamic loads, general dimensional configuration, size, weight, and appearance;
 - ii. it will reliably perform at least equally well in function imposed by the design concept of the completed Project as a functioning whole, and;
 - b. CONTRACTOR certifies that:
 - i. there is no increase in cost to the OWNER; and
 - ii. it will conform substantially to the detailed requirements of the item named in the Contract Documents.

PROJECT ENGINEER may reject the proposed substitution at their sole discretion. No justification shall be necessary for the rejection.

4.06 Concerning Subcontractors, Suppliers, and Others

- A. CONTRACTOR shall not employ any subcontractor, supplier, or other individual or entity (including those acceptable to OWNER as indicated in this Part 4), whether initially or as a

replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

- B. If the Contract Documents require the identity of certain subcontractors, suppliers, or other individuals or entities to be submitted to OWNER by OWNER by a specified date prior to the Effective Date of the Contract, and if CONTRACTOR has submitted a list thereof in accordance with the Contract Documents, OWNER's acceptance of any Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity at no additional cost to the OWNER. No acceptance by OWNER of any Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER to reject defective Work.
- C. CONTRACTOR shall be fully responsible to OWNER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work. Nothing in the Contract Documents shall create any contractual relationship between OWNER, and any Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER to pay or to see to the payment of any moneys due any Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect Contract with CONTRACTOR.
- E. All Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work shall communicate with OWNER through CONTRACTOR.
- F. The Contract Documents shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed by a Subcontractor or Supplier shall be pursuant to an agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents. Whenever any agreement is with a Subcontractor or Supplier who is listed as an additional insured on the insurance provided in the Instructions to Bidders, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, DESIGN ENGINEER, and all other individuals or entities identified in the Contract Documents to be listed as insured or additional insurers (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other insurance applicable to the Work. If the insurers on any policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.
- H. The CONTRACTOR shall not subcontract more than 49% of the value of this Contract. Violation of this provision of the contract may be deemed to be a breach of the Contract. CONTRACTOR's failure to remedy after notice shall entitle OWNER to any and all remedies as set forth in the Contract Documents applicable to OWNER'S rights in the event of breach.

4.07 Patent Fees and Royalties

- A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in these Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, DESIGN ENGINEER, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

4.08 Permits

- A. Unless otherwise provided in these Contract Documents, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all charges and inspection fees necessary to complete the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Contract. OWNER shall pay all charges of utility owners for connections to provide permanent service to the Work.

4.09 Laws and Regulations

- A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, OWNER and DESIGN ENGINEER shall not be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.
- B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. It shall not be CONTRACTOR's primary responsibility to make certain that the Contract Documents are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of their obligations set forth under Part 2.
- C. Changes in Laws or Regulations not known at the time of opening of Bids having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Time. If OWNER and CONTRACTOR are unable to agree on any adjustment a Claim may be made as provided in Part 8.

4.10 Taxes

- A. CONTRACTOR shall pay all sales, consumer, use, and other taxes required to be paid in accordance with the Laws and Regulations which are applicable during the performance of the Work.

4.11 Use of Site and Other Areas

- A. Limitation on Use of Site and Other Areas: CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas

permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

- B. Removal of Debris during Performance of the Work: During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations as well as the terms in the Special Provisions.
- C. Cleaning: Prior to Final Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. Sanitary Provision: The CONTRACTOR shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Department of Health, or of the other bodies or tribunals, having jurisdiction thereof. He shall commit no public nuisance. The CONTRACTOR shall at all times keep the site of the work free from accumulations of waste material or rubbish caused by his employees or work. Upon the completion of the work and before final acceptance can be made, all evidence of construction shall be removed, all property restored to its original condition, all manholes, and any other items of construction, shall be clean and neat in appearance; any other necessary items of clean-up shall be performed.
- E. Loading Structures: CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.
- F. The Contractor shall carefully protect from disturbance or damage all private property and property corners. Property corners shall not be removed until the Project Coordinator has witnessed or otherwise referenced their location. Any damage to property corners shall be repaired/replaced at no additional cost to the OWNER. If any markers, identified or not, are disturbed, removed, or destroyed through the construction process, the CONTRACTOR shall retain the services of a Professional Land Surveyor, licensed in the State of North Carolina, and have those markers replaced. The CONTRACTOR shall further submit a drawing identifying the locations of those markers, signed and sealed by the licensed Professional Land Surveyor. At the CONTRACTOR's discretion, and without additional cost to the Contract, the surveyor may contact the DESIGN ENGINEER and have the markers offset prior to the commencement of construction.
- G. The CONTRACTOR shall not enter upon private property for any purpose without obtaining permission. He shall use suitable precautions to prevent damage to pipes, conduits, and other underground structures, and shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed. When or where direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct, in the execution of work, or in consequence of the non-execution thereof on the part of the CONTRACTOR, he shall restore at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring, as may be directed, or he shall make good such damage or injury in an acceptable manner.

- H. When any direct or indirect damage or injury is done to public or private property, by or on account of any act, omission, neglect or misconduct in the execution of the Work, or in consequence of the non-execution thereof on the part of the Contractor, he shall restore, at his own expenses, such property to a condition equal or better than existing before such damage or injury was done or he shall make good damage or injury in an acceptable manner.

4.12 Safety and Protection

- A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
1. All persons on the Site or who may be affected by the Work;
 2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. Other property at the Site or adjacent thereto not designated for removal, relocation, or replacement in the course of the Work.
- B. CONTRACTOR shall comply with all applicable State and Federal Laws and Regulations relating to the safety and protection of persons or property, from damage, injury, or loss. The Contractor shall erect and maintain all necessary safeguards for safety and protection. In the event a conflict arises between agencies, the stricter regulation shall apply. CONTRACTOR shall notify owners of adjacent property and other utility owners when the Work may affect them. The Contractor shall cooperate in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in this paragraph caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of the Contract Documents or to the acts or omissions of OWNER or DESIGN ENGINEER or DESIGN ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and OWNER has issued a notice to CONTRACTOR in accordance with Part 12 that the Work is acceptable.
- C. The CONTRACTOR shall comply with the OWNER's Safety Manual, Latest Edition. Where conflicts arise between OWNER and other regulations, the more stringent shall apply. A copy of the OWNER's Safety Manual will be made available to the CONTRACTOR. Any interpretation and enforcement made by the OWNER shall be binding upon the CONTRACTOR. The OWNER may visit the CONTRACTOR's work areas to verify that safety procedures are in accordance with applicable regulations. If the CONTRACTOR's personnel are observed creating a hazardous environment, corrective action shall be initiated immediately to reduce the possibility of injury. Corrective action by the OWNER will consist of advising the Contractor, of compliance and could result in the OWNER issuing notices of non-compliance for repeat violations for failure to take corrective measures. Inspection by the OWNER shall not constitute an acceptance of the CONTRACTOR's practices, methods, techniques, procedures, nor release the CONTRACTOR of the responsibility for safety and health of the job site.
- D. Neither the professional responsibilities of the OWNER, PROJECT ENGINEER or DESIGN ENGINEER, nor the presence of the OWNER or DESIGN ENGINEER's employees and/or

consultants at the construction site, shall relieve the CONTRACTOR or any other entity of their obligations, duties and responsibilities including but not limited to, construction means, methods, sequences, techniques or procedures necessary for performing, superintending or coordinating all portions of the Work in accordance with the Contract Documents and any health or safety precautions required by any regulatory agencies. The OWNER or DESIGN ENGINEER's their employees, representatives, and sub-consultants shall have no responsibility for site safety.

- E. The OWNER's or DESIGN ENGINEER's personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with any health and/or safety precautions. The CONTRACTOR is solely and exclusively responsible for job site safety and shall include the OWNER and DESIGN ENGINEERS as additional insured for primary protection under the CONTRACTOR's general liability policy.

4.13 Safety Representative

- A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.
- B. All crews that operate in and around trenches shall have their own Competent Person as defined by OSHA standards.

4.14 Hazard Communication Programs

- A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information in accordance with Laws or Regulations. The Contractor shall be responsible to provide and maintain Material Safety Data Sheets (MSDS) sheets at the job site at all times. The sheets shall be located in an easily accessible and prominently located area.
- B. CONTRACTOR shall comply with the applicable North Carolina Occupational Safety and Health Standards and regulations while performing services contracted by OWNER.
- C. The OWNER is subject to Hazard Communication Standard 29 CFR 1910 (Standard). The Contractor shall provide MSDS required under the standard for all hazardous materials. The MSDS shall be provided with all hazardous materials. Container labeling meeting all requirements of the Standard shall be appropriately affixed to the shipping or internal containers. The Owner reserves the right to refuse shipments of hazardous materials not appropriately labeled or when MSDS have not been received prior to or concurrent with receipt of the shipment, or whenever the material is delivered in a manner inconsistent with any applicable Law and/or Regulation. The CONTRACTOR further certifies that all material supplied under this Contract meets all OSHA requirements, both Federal and those of the State of North Carolina, and further certifies that, if the material delivered is found to be in non-compliant with the applicable State or Federal OSHA requirements all costs necessary to bring the material into compliance shall be borne by the Contractor.
- D. Additional OWNER's safety programs, if applicable, are covered in the OWNER's Safety Manual.

4.15 Emergencies

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give the PROJECT ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have

been caused or are required as a result of the emergency. If the PROJECT ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

4.16 Continuing the Work

- A. CONTRACTOR shall continue the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. The CONTRACTOR's refusal to continue the Work during disputes and disagreements with OWNER, the pending of claims, or the pending of change order requests shall be a violation of the Contract Documents.
- B. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Part 13 or as OWNER and CONTRACTOR may otherwise agree in writing.

4.17 Contractor's General Warranty and Guarantee

- A. CONTRACTOR warrants and guarantees to OWNER, PROJECT ENGINEER, and DESIGN ENGINEER that all Work shall be in accordance with the Contract Documents and shall not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. Abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or
 - 2. Normal wear and tear under normal usage.
- B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following shall constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:
 - 1. Observations by PROJECT ENGINEER
 - 2. Recommendation by PROJECT ENGINEER or payment by OWNER of any progress or final payment;
 - 3. The issuance of a certificate of Final Completion by PROJECT ENGINEER or any payment related thereto by OWNER;
 - 4. Use or occupancy of the Work or any part thereof by OWNER;
 - 5. Any acceptance by OWNER or any failure to do so;
 - 6. Any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by PROJECT ENGINEER;
 - 7. Any inspection, test, or approval by others; or
 - 8. Any correction of defective Work by OWNER.

4.18 Indemnification

- A. In any and all claims against OWNER or DESIGN ENGINEER or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- B. The indemnification obligations of CONTRACTOR shall not extend to the liability of DESIGN ENGINEER and DESIGN ENGINEER's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Contract Documents; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

4.19 Access to Records

- A. CONTRACTOR and all Subcontractors shall maintain books, records, documents, and other evidence directly pertinent to performance of the Work under the Contract Documents in accordance with generally accepted and consistently applied accounting principles and practices. OWNER shall have access during normal business hours to books, records, documents, and evidence for the purposes of inspection, audit, and copying. CONTRACTOR shall provide suitable facilities for access and inspection. All books, records, and evidence shall be maintained and made available for a period of three (3) years after the date of final payment or until the final settlement of any disputes, claims, and litigation, whichever shall occur later. CONTRACTOR shall provide to OWNER, when requested, copies of all purchase orders issued or sub-agreements executed, complete with all amendments, for Work under the Contract Documents. CONTRACTOR shall include this provision in all subcontracts.

PART 5. OTHER WORK

5.01 Related Work at Site

- A. OWNER may perform other work related to the Project at the Site by OWNER's employees, other contractors, or have other work performed by utility owners. If other work is not noted in the Contract Documents, then:
1. OWNER shall provide written notice to CONTRACTOR prior to starting any other work; and
 2. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Time that should be allowed as a result of other work, a Claim may be made as provided in Part 8.
- B. CONTRACTOR shall provide proper and safe access to the Site for all contractors, utility owners, and OWNER's employees performing other work. Contractor shall provide a reasonable opportunity for the mobilization and storage of materials and equipment and the performance of such other work. The Contractor shall properly coordinate the other work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall perform all work that may be required to properly integrate with other work. CONTRACTOR shall not endanger or alter

any work of others without the expressed written consent of PROJECT ENGINEER. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in direct Contracts between OWNER, and utility owners, and other contractors.

- C. If any part of CONTRACTOR's Work depends upon work performed by others under this Part 5, CONTRACTOR shall notify PROJECT ENGINEER in writing of any delays, defects, or deficiencies in the other work that may prevent the CONTRACTOR from performing the Work. CONTRACTOR's failure to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in the other work.

5.02 Coordination

- A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the PROJECT ENGINEER shall provide the following:
1. The individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 2. The specific matters to be covered by such authority and responsibility will be itemized; and
 3. The extent of such authority and responsibilities will be provided.
- B. Unless otherwise specified by the PROJECT ENGINEER, OWNER shall have sole authority and responsibility for such coordination.

PART 6. OWNER'S RESPONSIBILITIES

6.01 Project Engineer

- A. PROJECT ENGINEER shall be the OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of PROJECT ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and PROJECT ENGINEER. The assignment of any authority, duties, or responsibilities to PROJECT ENGINEER under the Contract Documents, or any undertaking, exercise, or performance thereof by PROJECT ENGINEER, is intended to be for the sole and exclusive benefit of OWNER and not for the benefit of CONTRACTOR, Subcontractor, Supplier, or any other person or organization, or for any surety or employee or agent of any of them.

6.02 Roles and Responsibilities

- A. Authorities and Duties of PROJECT ENGINEER
1. The PROJECT ENGINEER shall in no case act as foreman, direct the CONTRACTOR's personnel, subcontractor personnel or direct or perform duties for the CONTRACTOR, nor interfere with the management of the Work by the CONTRACTOR.
 2. The PROJECT ENGINEER may make changes in grades and quantities when necessary to keep Work in progress.

3. To prevent disputes and litigation, the PROJECT ENGINEER shall in all cases determine the amount, quality, and acceptability of the Work and materials which are to be paid for under the Contract. The PROJECT ENGINEER shall in all cases decide every question which may arise relative to the fulfillment of the Contract. The PROJECT ENGINEER's opinion of the costs and decisions shall be final and conclusive.
4. The PROJECT ENGINEER will not decide disputes between the CONTRACTOR and person or entities other than the OWNER.
5. Clarifications and interpretations of the Contract Documents shall be issued by PROJECT ENGINEER.

B. Authorities and Duties of the PROJECT COORDINATOR

1. The PROJECT COORDINATOR employed by the OWNER shall be authorized to inspect all Work performed and all materials furnished. Their inspection shall extend to all parts of the Work, and to preparation or manufacture of the materials to be used.
2. The PROJECT COORDINATOR shall report to the PROJECT ENGINEER as to the progress and performance of the Work. The PROJECT COORDINATOR shall report whenever the materials furnished and/or the work performed by the CONTRACTOR fails to fulfill the requirements of the Contract Documents. The PROJECT COORDINATOR shall notify the CONTRACTOR of any failure to meet requirements. However, such observation shall not relieve the CONTRACTOR of any obligation to perform all the Work strictly in accordance with the Contract Documents.
3. In case of any dispute arising between the CONTRACTOR and the PROJECT COORDINATOR as to the materials furnished or the performance of the Work, the PROJECT COORDINATOR shall have the authority to reject materials or refer the issue to the PROJECT ENGINEER. Any suspension or work stoppage for rejected materials or performance of the Work shall not be the basis of a claim by the CONTRACTOR for additional Contract time or costs. Such rejection shall also not be the basis of a future claim by the CONTRACTOR for adjustment in Contract unit price or lump sum price or any work item contained in the Contract.
4. Where special inspection or testing is required by the State laws or local ordinances, instruction of the PROJECT ENGINEER, specification or codes, the CONTRACTOR shall give adequate notice to the PROJECT COORDINATOR of the time set for such inspection or test, if the inspection or test will be conducted by a party other than the PROJECT ENGINEER. Such section tests or inspections shall be made in the presence of the PROJECT ENGINEER or his authorized representative, and it shall be the CONTRACTOR's responsibility to serve ample notice of such test.
5. The PROJECT COORDINATOR shall inspect the Work for the purposes of payment approval and monitoring progress of the Work. However, the PROJECT COORDINATOR shall not have any responsibility for the Work performed by the CONTRACTOR or its subcontractors, for the Safety of the work site, nor for any deficiency in the Work, whether discovered during the construction or after acceptance.
6. Regardless of the of the inspections by the PROJECT COORDINATOR or the PROJECT ENGINEER, the CONTRACTOR is responsible for performing and completing the Work in accordance with the Contract Documents. The OWNER has no liability or responsibility to the CONTRACTOR or Surety for work performed by the CONTRACTOR which is not in accordance with the Contract Documents, regardless of whether discovered during construction or after acceptance.

6.03 Communications to Contractor

- A. Except as otherwise provided in these Contract Documents, OWNER shall issue all communications to CONTRACTOR through PROJECT ENGINEER.

6.04 Clarifications and Interpretations

- A. Requests for clarification from the CONTRACTOR shall be directed to the PROJECT ENGINEER. The PROJECT ENGINEER, in coordination with the DESIGN ENGINEER (as the PROJECT ENGINEER deems necessary) will review the request for clarification and issue written clarifications or interpretations as necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Any written clarifications and interpretations shall be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Time, or both, that should be allowed as a result of a written clarification or interpretation; a Claim may be made as provided in Part 8.

6.05 Replacement of DESIGN ENGINEER

- A. In case of termination of the employment of DESIGN ENGINEER, OWNER shall appoint an engineer whose status under the Contract Documents shall be that of the former DESIGN ENGINEER.

6.06 Furnish Data

- A. OWNER shall furnish the data required of OWNER in accordance with the Contract Documents.

6.07 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. If PROJECT COORDINATOR and CONTRACTOR cannot agree to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work, the matter will be referred to PROJECT ENGINEER for final decision. Written notice (to include supporting documentation) of each such claim, dispute, or other matter shall be delivered by the CONTRACTOR to the PROJECT ENGINEER no later than thirty (30) days calendar days after the start of the occurrence. Failure to file a claim within the allowed time frame shall waive the CONTRACTOR's ability to make future claims for that particular instance. PROJECT ENGINEER will render a formal decision in writing within thirty (30) calendar days after receipt of the CONTRACTOR's submittal, in accordance with Contract Documents.
- B. The rendering of a decision by PROJECT ENGINEER with respect to any claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in Part 12) shall be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws and Regulations in respect to any such claim, dispute, or other matter.

6.08 Rejecting Defective Work

- A. PROJECT ENGINEER shall have authority to reject Work that is not in accordance with the Contract Documents. PROJECT ENGINEER shall also have authority to require special inspection or testing as provided in Part 11, whether or not the Work is fabricated, installed, or completed.

6.09 Determinations for Unit Price Work

- A. PROJECT COORDINATOR shall determine the actual quantities and classifications of Work performed. PROJECT COORDINATOR shall review with CONTRACTOR the actual quantities and classifications for payment prior to CONTRACTOR submitting an Application for Payment.

6.10 Pay When Due

- A. OWNER shall make payments to CONTRACTOR in accordance with these Contract Documents.

6.11 Limitations on Owner's Responsibilities

- A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

6.12 Limitations on PROJECT ENGINEER and PROJECT COORDINATOR Responsibilities

- A. PROJECT ENGINEER and PROJECT COORDINATOR shall not be responsible for the acts or omissions of CONTRACTOR or of any Sub-contractor, any Supplier, or of any other individual or entity performing any of the Work.
- B. PROJECT ENGINEER and PROJECT COORDINATOR shall not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. PROJECT ENGINEER and PROJECT COORDINATOR shall not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.
- C. The limitations upon authority and responsibility set forth in this paragraph shall also apply to OWNER's Consultants, Agents, Officers, and Employees.

6.13 Non Compliance Notices

- A. Failure to comply with any terms of this Contract shall result in the issuance of a Non-Compliance Notice (NCN). This notice shall be issued by the PROJECT ENGINEER and will outline the violation of the Contract. In the notice, a timeframe for resolution will be established. If the issue is not resolved and a written response is not received within the given timeframe, pay applications shall, at the PROJECT ENGINEER's discretion, not be processed.
- B. After two (2) NCN's have been issued for the same violation, the project may be shut down until the issue is resolved to the OWNER's satisfaction. If Work is stopped due to a Contract violation, no consideration will be given for an extension of Contract Time. The issuance of any NCN may influence the OWNER's decision to award the CONTRACTOR future work.

PART 7. DESIGN ENGINEER'S STATUS DURING CONSTRUCTION

7.01 Limitations on DESIGN ENGINEER's Authority and Responsibilities

- A. Except for the negligence of Engineer, its agents, officers, and employees neither DESIGN ENGINEER's authority or responsibility under the provisions of the Contract Documents nor any decision made by DESIGN ENGINEER in good faith either to exercise or not exercise such

authority or responsibility or the undertaking, or performance of any authority or responsibility by DESIGN ENGINEER shall create, impose, or give rise to any duty in Contract, tort, or otherwise owed by DESIGN ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

7.02 Visits to Site

- A. DESIGN ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction, as DESIGN ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. DESIGN ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. DESIGN ENGINEER efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents.
- B. DESIGN ENGINEER shall not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incidental thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

PART 8. CHANGES IN THE WORK; CLAIMS

8.01 Authorized Changes in the Work

- A. Without invalidating the Contract and without notice to any surety, OWNER may, at any time order additions, deletions, or revisions in the Work by a Change Order or a Work Change Directive. Upon receipt of the notification from PROJECT ENGINEER, CONTRACTOR shall proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. At any time PROJECT ENGINEER may request CONTRACTOR to submit a proposal for a proposed change in the Work. Within ten (10) business days after receipt of a Request for Proposal, CONTRACTOR shall submit, to PROJECT ENGINEER, a written detailed proposal for the change. The detailed proposal shall include an itemized estimate of all costs that will result directly or indirectly from the proposed change and include an assessment of the impact on the overall project schedule. Unless otherwise directed, itemized estimates shall be in accordance with Part 9. Proposals shall be of sufficient detail to permit an analysis by PROJECT ENGINEER of all material, labor, equipment, subcontracts, overhead costs, and fees. The proposal shall cover all Work involved in the change, whether such Work was deleted, added, changed, or impacted. Each cost category shall be supported with substantiating documentation which may include, but is not limited to, quantity takeoffs, quotations, invoices, cost records, certified payrolls and identification of estimating guidelines and resources. The subcontract portions of each proposal shall be similarly supported. Itemized schedule adjustments shall be in sufficient detail to permit an analysis of impact. If OWNER elects to proceed with the change covered by the Request for Proposal, such change will be authorized by execution of proper documentation in accordance with this Part 8. Notwithstanding the Request for Proposal, CONTRACTOR shall continue to perform the Work and maintain the progress schedule. PROJECT ENGINEER and OWNER shall have twenty (20) business days after receipt of the detailed proposal to respond in writing. Delays in the submittal of the written and detailed proposal will be considered non-prejudicial.
- C. The adjustment in Contract Price and/or Contract Time stated in a Change Order shall comprise the total price and/or time adjustment due or owed CONTRACTOR for the Work or changes defined in the Change Order. Signing of the Change Order constitutes full and mutual accord by OWNER and CONTRACTOR for the adjustment in the Contract Price and/or Time as a result of increases or decreases in costs and time of performance caused directly and indirectly by the

change. By approving the Change Order the CONTRACTOR waives all rights to claim further adjustments related to the Change Order.

- D. CONTRACTOR is obligated, in the performance of changes in the Work, to mitigate all cost and time related to any changes and shall identify in writing, when requested by OWNER, the actions taken in that regard.
- E. In the event that OWNER and CONTRACTOR are unable to agree as to the cost and time to perform the change (deletions or additions) in the Work, OWNER and PROJECT ENGINEER may make a unilateral determination of the reasonable cost and time to perform the change in the Work, based upon their own estimates, CONTRACTOR's submission, or a combination thereof, and issue a unilateral Change Order for the amounts of cost and time so determined, which shall become binding upon CONTRACTOR. The unilateral Change Order shall enable OWNER to make payments for Work performed thereunder, and CONTRACTOR shall be paid for work completed, based on costs determined by OWNER. CONTRACTOR may appeal the unilateral Change Order within fifteen (15) business days of receipt, as provided in Part 14. Failure of the parties to reach an agreement regarding the cost and time of performing the change in the Work shall not relieve CONTRACTOR from performing the change in the Work.
- F. Should unforeseen circumstances arise which, in the opinion of the PROJECT ENGINEER, require work to be done upon which no price can be agreed, the PROJECT ENGINEER may require that the work be accomplished under negotiated contract with another contractor or with the OWNER's own forces, or on a force account basis as follows:
1. All Costs shall be in accordance with Part 9.
 2. All activities shall be documented daily (time, material tickets, invoices, etc.) by the PROJECT COORDINATOR, agreed upon with the CONTRACTOR, and submitted to the PROJECT ENGINEER.
 3. No claims for force account work will be accepted where the PROJECT ENGINEER had not specifically directed the CONTRACTOR.
 4. Skilled and common labor shall be paid for in accordance with the approved "Labor & Equipment Rates" submittal. Labor classifications shall be approved by the PROJECT ENGINEER prior to beginning force account work.
 5. Materials and supplies used are to be listed on invoices. Copies of invoices which show all the materials, quantities, costs, etc. utilized in the force account work shall be submitted to the PROJECT COORDINATOR within two (2) business days of the date of the activity.
 6. Equipment shall be paid for in accordance with the approved "Labor & Equipment Rates" submittal. Equipment shall be approved by the PROJECT ENGINEER prior to beginning force account work.
 7. The PROJECT ENGINEER shall determine the total cost of the force account work, including 15% overhead and profit.
 8. Force account work shall be authorized by the PROJECT ENGINEER in writing.

8.02 Unauthorized Changes in the Work

- A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Part 2, except in the case of an emergency as provided in Part 4 or in the case of uncovering Work as provided in Part 11.
- B. Work performed without staking and/or approved cut sheets, and/or work performed beyond the Project limits shall be considered as unauthorized and at the expense of the CONTRACTOR. Any unauthorized work may be ordered removed and/or replaced by the PROJECT ENGINEER at the CONTRACTOR's sole expense.

8.03 Execution of Change Orders

- A. OWNER and CONTRACTOR shall execute Change Orders as recommended by PROJECT ENGINEER authorizing:
 - 1. Changes in the Work, including but not limited to: changes requested by OWNER, changes required due to acceptance of defective work as outlined in Part 11, OWNER's correction of defective work as outlined in Part 11, and changes requested by CONTRACTOR and approved by PROJECT ENGINEER;
 - 2. Changes in the Contract Price and/or Contract Time which are agreed to by the Parties, including any undisputed costs and/or time for Work actually performed in accordance with a Work Change Directive; and;
 - 3. Changes in the Contract Price and/or Contract Time incorporating the written decision of the PROJECT ENGINEER resolving any claims or disputes. CONTRACTOR reserves the right to delay signing the Change Order while appealing the PROJECT ENGINEER's written decision regarding the claim or dispute. However, CONTRACTOR shall continue to perform the Work and adhere to the project schedule, as provided in Part 4.

8.04 Notification to Surety

- A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be OWNER's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change. OWNER shall simultaneously provide CONTRACTOR with a copy of such notice. Surety shall furnish OWNER proof of such adjustment.

8.05 Claims and Disputes

- A. Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the CONTRACTOR to PROJECT ENGINEER no later than thirty (30) calendar days after the start of the event. CONTRACTOR shall provide PROJECT ENGINEER with supporting data within sixty (60) calendar days after the start of the event (unless the PROJECT ENGINEER allows additional time for submittal of additional or more accurate data). A Claim for an adjustment in Contract Price and/or Contract Time shall be prepared in accordance with the provisions of Part 10. Each Claim shall be accompanied by a written statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR believes it is entitled.
- B. PROJECT ENGINEER will render a formal decision in writing within thirty (30) calendar days after receipt of the last submittal of the CONTRACTOR unless additional time is required. PROJECT ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. The CONTRACTOR submits a written appeal within 15 calendar days of receipt of PROJECT ENGINEER's written decision. Upon receipt of the written appeal, PROJECT ENGINEER shall coordinate discussions between OWNER, CONTRACTOR, and PROJECT ENGINEER in an attempt to reach resolution. Failure to reach resolution will result in the claim being settled in accordance with the dispute resolution procedures set forth in Part 14; or
 2. If PROJECT ENGINEER does not issue a formal decision in writing within 30 calendar days a decision denying the Claim in its entirety shall be deemed to have been issued.
- C. No Claim for an adjustment in the Contract Price or Contract Time shall be valid if not submitted in accordance with this section.

PART 9. COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

9.01 Cost of the Work

- A. The term "Cost of the Work" means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR shall be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by PROJECT ENGINEER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, and shall include only the following items:
1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by PROJECT ENGINEER and CONTRACTOR. Such employees include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by PROJECT ENGINEER.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. Should the OWNER deposit funds with the CONTRACTOR, the CONTRACTOR shall provide copies of invoices for rental equipment and agreements. Further, all trade discounts, rebates, refunds, and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.
 3. Payments made by CONTRACTOR to Subcontractors for Work performed. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the

Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this paragraph.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
 5. Supplemental costs including the following:
 - a. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remains the property of CONTRACTOR.
 - b. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with the rental agreements and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - c. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.
 - d. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - e. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with the Contract Documents), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.
 - f. The cost of utilities, fuel, and sanitary facilities at the Site.
 - g. The cost of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.
- B. The term "Cost of the Work" shall not include any of the following items:
1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general

administration of the Work and not specifically included in the agreed upon schedule of job classifications, all of which are to be considered administrative costs.

2. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.
 3. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.
 4. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
 5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly in this Part.
 7. Extended office overhead (except office and temporary facilities at the site) or lost profit associated with delays of any type. Minor expenses such as long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work. Such costs are considered to be administrative costs covered by CONTRACTOR's fee.
 8. Any and all costs, which arise from any suspension, delay, or interruption to a Work activity or the Work as a whole, to the extent that performance would have been so suspended, delayed, or interrupted for reasons beyond the control and without the fault or negligence of OWNER. Examples of such situations include, but are not limited to, instances where compensable delays occur concurrently with either excusable or inexcusable delays and instances where such combinations of delays, even when not concurrent, individually give rise to similar impacts on the completion of the Work.
- C. When all the Work is performed on the basis of cost-plus, CONTRACTOR's fee shall be determined as set forth in the Contract Documents. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR's fee shall be determined as set forth in Part 10.

9.02 Cash Allowances

- A. It is understood that CONTRACTOR has included in the Price all allowances described in the Contract Documents and shall cause the Work covered to be performed for such sums as may be acceptable to OWNER. CONTRACTOR agrees that:
1. The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

- B. Prior to final payment, an appropriate Change Order will be issued as recommended by PROJECT ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

9.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Bid Form. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR shall be made by PROJECT ENGINEER subject to the provisions of Part 6.
- B. Each unit price shall include an amount to cover the CONTRACTOR's overhead and profit for each separately identified item.
- C. All unit prices submitted with the CONTRACTOR's bid proposal shall be held firm against any increase for the duration of Contract.
- D. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with Part 8:
1. The quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly plus or minus fifty (50) percent from the estimated quantity of such item indicated in the Bid Form; and
 2. There is no corresponding adjustment with respect any other item of Work; and
 3. If CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

PART 10. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

10.01 Change of Contract Price

- A. The Price may only be changed by a Change Order. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Price shall be determined as follows:
1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Part 9); or
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by mutually agreed unit prices or lump sum (which may include an allowance for overhead and profit); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a unit price or lump sum is not reached, on the basis of the Cost of the Work (subject to provisions of Part 9) plus a CONTRACTOR's fee for overhead and profit.

- B. CONTRACTOR shall establish and maintain records in accordance with generally accepted accounting practices and submit in a form acceptable to OWNER an itemized cost breakdown together with supporting data. OWNER may audit CONTRACTOR's records related to such costs during normal business hours.
- C. The CONTRACTOR's total fee for overhead and profit shall not exceed 15% of the value of the additional work.
- D. No increase in Price shall be granted for Inexcusable Delays, unless otherwise agreed to by OWNER.

10.02 Change of Contract Time

- A. The Contract Time may only be changed by a Change Order. Any adjustment in the Contract Time shall be based on the following:
 - 1. Additional Work requested by OWNER
 - 2. Work deleted from Contract by OWNER
 - 3. Excusable delay, as approved by the Project Engineer, o
 - 4. Approved written request submitted by CONTRACTOR.
- B. Excusable Delays in the completion of the entire Work or specified part thereof shall not give rise to default under the Contract by either party. Any such delays shall not entitle CONTRACTOR to any additional compensation. The sole remedy of CONTRACTOR shall be an extension of Contract Time pursuant to this Part 10.
- C. No extensions of Contract Time shall be granted for Inexcusable Delays, unless otherwise agreed to by OWNER.
- D. Except as otherwise provided herein CONTRACTOR shall not be entitled to recover damages due to delays of any type.
- E. In presenting justification for any adjustment of Contract Time, CONTRACTOR shall not rely on their initial sequencing of the Work but shall rely on the updated schedule resulting from the delay or change in Work. The PROJECT ENGINEER may request the CONTRACTOR submit an updated schedule prior to approval of the request. The schedule shall be submitted in accordance with Section 01310 of these Contract Documents. CONTRACTOR shall demonstrate a reasonable effort to reschedule any Work which is delayed by changes or unforeseeable conditions so as to minimize any additional time and cost to OWNER.

10.03 Delays Beyond Contractor's Control

- A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Time due to delay beyond the control of CONTRACTOR, the Contract Time will be extended in an amount equal to the time lost due to such delay if a Claim is made in accordance with Part 8. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts of neglect by OWNER, acts of neglect of utility owners or other contractors performing other work, fires, floods, epidemics, weather delays, or acts of God.

10.04 Delays Within Contractor's Control

- A. The Contract Time will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR. Should the CONTRACTOR choose to relocate to an alternate area within the project to continue the Work, it shall be deemed as a delay within the CONTRACTOR's control and shall be at no cost to the OWNER.

10.05 Delays Beyond Owner's and Contractor's Control

- A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Time due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Time in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole remedy for such delay.

10.06 Delay Damages

- A. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:
1. Delays caused by or within the control of CONTRACTOR; or
 2. Delays beyond the control of both OWNER and CONTRACTOR.
- B. Nothing in this section bars a change in Contract Price pursuant to this Part 10 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

10.07 Computation of Time

- A. Extensions to the Contract Time shall be granted in calendar days. If at the end of the project the final completion date falls on a non work day, the PROJECT ENGINEER may, at their sole discretion, grant additional time so that the final completion date is a work day.

PART 11. TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

11.01 Notice of Defects

- A. Notice of all defects shall be given to CONTRACTOR upon discovery. All defective Work may be rejected, corrected, or accepted as provided in this Part 11.

11.02 Access to Work

- A. OWNER, DESIGN ENGINEER, DESIGN ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests shall have access to the Site and the Work for their observation, inspecting, and testing. CONTRACTOR shall provide proper and safe conditions for access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply.

11.03 Uncovering Work

- A. If any Work requiring inspection is covered prior to OWNER's approval, it shall be uncovered for OWNER's inspection at CONTRACTOR's expense, unless otherwise authorized by OWNER.

- B. If PROJECT ENGINEER considers it necessary that covered Work be inspected or tested, CONTRACTOR, at PROJECT ENGINEER's request, shall uncover or otherwise make available for inspection or testing that portion of the Work in question. The CONTRACTOR shall furnish all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER may be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim as provided in Part 8. If such Work is not found to be defective, CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time or both, directly attributable to such uncovering, exposure, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefore as provided in Part 8.

11.04 Owner May Stop the Work

- A. If the Work is defective, or if CONTRACTOR's operations endanger or cause unapproved disruptions to the general public or facility, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work or any portion thereof, until the cause for such order is eliminated, and CONTRACTOR shall have no basis for making a claim thereof; however, this right of OWNER to stop the work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

11.05 Temporary Suspension of Work

- A. The PROJECT ENGINEER shall have the authority to suspend the work, wholly or in part, for such period or periods as deemed necessary, due to conditions as are considered unfavorable for the proper continuation of the Work. If it should become necessary to stop all work for an indefinite period, the CONTRACTOR shall store all materials in such manner that they will not deteriorate or become damaged in any way, and he shall take every precaution to prevent damage or deterioration of the Work performed, provide suitable drainage by opening ditches, shoulder drains, etc., and erect structures where necessary. The CONTRACTOR shall not suspend work without authority. Neither the failure of the PROJECT ENGINEER to notify the CONTRACTOR to suspend work on account of unfavorable conditions nor permission by the PROJECT ENGINEER to continue work during unfavorable conditions shall be a cause for the acceptance of any work which does not comply in every respect with these Contract Documents.

11.06 Correction or Removal of Defective Work

- A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by PROJECT ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

11.07 Correction Period

- A. All work completed under these Contract Documents shall be guaranteed by the CONTRACTOR for a period of one (1) year from the date of final completion. During that period, all defects

discovered in the work (to include land or other areas made available to the CONTRACTOR), as determined by the OWNER, shall be removed and replaced by the CONTRACTOR at no cost to the OWNER. All work shall be done in accordance with OWNER's standards. The OWNER may conduct an independent inspection, at their sole expense, of the completed work prior to the completion of the one (1) year warranty period.

Should the OWNER's inspection determine that the work is not in accordance with these Contract Documents; the CONTRACTOR shall mobilize and make all necessary repairs at no expense to the OWNER. The CONTRACTOR will receive written notification from the OWNER, and be allowed the chance to review any available inspection pictures or other documentation. The CONTRACTOR shall respond to the OWNER with a plan of action within 30 calendar days of receiving notification. The CONTRACTOR shall mobilize and begin to complete the work within 60 calendar days of receiving notification. The CONTRACTOR shall:

1. Repair such defective land or areas.
2. Correct such defective Work or, if the defective Work has been rejected by the PROJECT ENGINEER, remove it from the project and replace it with Work that is not defective.
3. Satisfactorily correct, repair, remove, or replace any damage to other Work, damage to the work of others, and damage to other land or areas.

If the CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the OWNER reserves the right to contract with another party to complete the warranty work, at the sole expense of the CONTRACTOR. All claims, costs, losses, and damages (including but not limited to all fees and charges or design professionals, attorneys, and other professionals and all court, arbitration or other dispute resolution costs arising out of or relating to such correction or repair or such removal and replacement of work of others) shall be paid by the CONTRACTOR.

The warranty period stated is specifically for the work installed by the CONTRACTOR. Any collateral damage discovered during the warranty period will be investigated and the CONTRACTOR will be required to respond if the damage is determined to have occurred during the construction process.

- B. In special circumstances where a portion of the Work is placed in service before Final Completion of all the Work, the correction period for that portion may start from an earlier date if so provided in the Contract Documents or by written authorization from the Project Engineer.
- C. Where defective Work including restoration (and damage to other Work resulting therefrom) has been corrected, the correction period with respect to such Work shall be extended for an additional period of one year after such correction has been satisfactorily completed.
- D. CONTRACTOR's obligations under this Part 11 are in addition to any other obligation or warranty. The provisions of this Part 11 shall not be construed as a substitute for, a waiver of, the provisions of any applicable statute of limitation or repose.

11.08 Acceptance of Defective Work

- A. If, instead of requiring correction of defective Work to include restoration, OWNER may elect to accept the work. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by PROJECT ENGINEER) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with

respect to the Work, and OWNER may be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefore as provided in Part 8. If the acceptance occurs after final payment, an appropriate amount will be paid by CONTRACTOR to OWNER.

11.09 Owner May Correct Defective Work

- A. If CONTRACTOR fails to correct defective Work or to remove and replace rejected Work as required by PROJECT ENGINEER in accordance with Part 11. A within the time frame provided in the written notification, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven (7) calendar days written notice to CONTRACTOR, correct and remedy any such deficiency.
- B. In connection with such corrective and remedial action, the OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, and incorporate in the Work all materials and equipment for which OWNER has paid CONTRACTOR. CONTRACTOR shall allow OWNER's agents and employees, OWNER's other contractors, and DESIGN ENGINEER access to the Site to enable OWNER to exercise the rights and remedies under this Part 11.
- C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this Part 11 shall be charged against CONTRACTOR, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents with respect to the Work. The OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefore as provided in Part 8. Such claims, costs, losses and damages shall include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.
- D. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this Part 11.

PART 12. PAYMENTS TO CONTRACTOR AND COMPLETION

12.01 Progress Payments

- A. Applications for Payments
 - 1. The CONTRACTOR shall verify and coordinate monthly quantities with the PROJECT COORDINATOR. Quantities shall be based on the work completed as of the last Friday of the month (or the previous business day, should that Friday be a legal Holiday).
 - 2. The CONTRACTOR shall prepare and submit a completed pay application to the PROJECT ENGINEER, including the following documentation:
 - a. Completed sales tax certificate, documenting the sales tax paid and the County paid, for all materials consumed or to be consumed as part of the Work
 - b. Affidavit E as required by the Disadvantaged Business Enterprise program, and

- c. Copies of all invoices of materials claimed on the sales tax certificate. The CONTRACTOR shall furnish three (3) copies of the pay application and all supporting documentation.
 3. There shall be no payment for stored materials.
- B. Sales Tax - The following procedure shall be followed relative to the North Carolina Sales Tax applicable to this Project. CONTRACTOR shall comply fully with the requirements outlined hereinafter, in order that the OWNER may recover the amount of the tax permitted under the law.
 1. It shall be the CONTRACTOR's responsibility to furnish the OWNER documentary evidence showing the material used, sales tax paid, and County paid (County of sale) by the CONTRACTOR and each of his Subcontractors. Such evidence shall be transmitted with each pay estimate.
 2. The documentary evidence shall consist of a certified statement by the CONTRACTOR and each of his Subcontractors individually showing total purchases of materials from each separate vendor and total sales taxes paid each vendor. The CONTRACTOR shall submit a certified statement with each pay request, for sales taxes paid during that pay request period. A certified form is required even if no sales tax was paid for pay request period.
 3. Materials used from CONTRACTOR or Subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices and amount of County of Use Tax paid.
 4. The CONTRACTOR shall not be required to certify the Subcontractor's statements but must obtain the Subcontractor's certification.
 5. CONTRACTOR shall furnish to OWNER invoices or copies of invoices for all materials purchased for said work within pay request period, and such invoices shall state the amount of North Carolina Sales Tax paid for materials, etc.
 6. CONTRACTOR shall not include any tax paid on supplies, tools, and equipment, which they use to perform their contracts and should include only those building materials, supplies, fixtures, and equipment which actually become a part of the Work.
- C. Review of Applications
 1. PROJECT ENGINEER will, within ten (10) business days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing PROJECT ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR shall make the necessary corrections and resubmit the Application.
 2. PROJECT ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by PROJECT ENGINEER to OWNER, that to the best of PROJECT ENGINEER's knowledge, information and belief:
 - a. The Work has progressed to the point indicated;
 - b. The quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Final Completion, to the results of any subsequent tests called for in the Contract

Documents, to a final determination of quantities and classifications for Unit Price Work under Part 7, and to any other qualifications stated in the recommendation); and

- c. The conditions precedent to CONTRACTOR being entitled to such payment appears to have been fulfilled.
3. By recommending any such payment PROJECT ENGINEER shall not be deemed to have represented that:
 - a. Inspections made to check the quality and/or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to PROJECT ENGINEER in the Contract Documents; or
 - b. There may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.
4. Neither PROJECT ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments, nor PROJECT ENGINEER's recommendation of any payment, including final payment, will impose responsibility on PROJECT ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on PROJECT ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any liens.
5. PROJECT ENGINEER may refuse to recommend the whole or any part of any payment if, in PROJECT ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in Part 12. PROJECT ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in PROJECT ENGINEER's opinion to protect OWNER from loss because:
 - a. The Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. The Contract Price has been reduced by Change Orders;
 - c. OWNER has been required to correct defective Work or complete Work in accordance with Part 11; or
 - d. Any reason(s) set forth in Section 5 of the Construction Agreement; or
 - e. PROJECT ENGINEER has actual knowledge of the occurrence of any of the events enumerated in Part 13.

D. Payment Becomes Due

1. Ten (10) business days after presentation of the Application for Payment to OWNER with PROJECT ENGINEER's recommendation, the amount recommended will (subject to the provisions of this paragraph) become due, and when due will be paid by OWNER to CONTRACTOR.

E. Reduction in Payment

1. OWNER may refuse to make payment of the full amount recommended by the PROJECT ENGINEER because:
 - a. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such liens;
 - b. There are other items entitling OWNER to a reduction of the amount recommended; or
 - c. OWNER has actual knowledge of the occurrence of any of the events outlined in Part 13.
2. If OWNER refuses to make payment of the full amount recommended by PROJECT ENGINEER, OWNER must give CONTRACTOR written notice stating the reasons for such action and pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, upon satisfactory resolution of the issue.

12.02 Contractor's Warranty of Title

- A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all liens.

12.03 Partial Utilization

- A. Use by OWNER of any completed part of the Work which has specifically been identified in the Contract Documents or as authorized in writing by Project Engineer, and is a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Final Completion of all the Work subject to the following conditions;
1. OWNER and CONTRACTOR shall make an inspection of that part of the Work to determine its status of completion. If PROJECT ENGINEER does not consider that part of the Work to be complete, PROJECT ENGINEER will notify CONTRACTOR in writing. If PROJECT ENGINEER considers that part of the Work to be complete, the PROJECT ENGINEER will notify the CONTRACTOR in writing that the OWNER will begin partial utilization of that Work.
 2. The CONTRACTOR remains responsible for completing or fulfilling all contractual obligations remaining to the Work being utilized.

3. No occupancy or separate operation of part of the Work will be accomplished prior to CONTRACTOR's compliance with the requirements of these Contract Documents pertaining to insurance.

12.04 Final Completion

- A. Completed work is pipe that has been installed, tested, inspected, disinfected, backfilled, paved, all above ground restoration has been performed, and CONTRACTOR has completed all the Work in an acceptable manner in accordance with the terms of the Contract. ***All work outlined in these Contract Documents shall be completed, prior to the Contractor requesting an inspection by the Project Coordinator.***
- B. When the PROJECT COORDINATOR deems the project complete and ready for final inspection, the PROJECT COORDINATOR shall notify the PROJECT ENGINEER. The PROJECT ENGINEER shall schedule a final inspection between the OWNER and CONTRACTOR. 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 30 calendar days of receipt. Failure to complete the punch list in that time may result in liquidated damages being assessed. The project will not be considered complete until all punch list items are completed and accepted, unless otherwise determined by the PROJECT ENGINEER. All punch list items shall be completed prior to release of final payment. Once PROJECT ENGINEER considers the Work to be complete a written notice of acceptance will be issued.

12.05 Warranty Period

- A. The warranty period will cover a corrections period of one full year after the Final Completion date. The CONTRACTOR shall submit a warranty agreement form which guarantees to the PROJECT ENGINEER/OWNER that all work has been completed in accordance with the Contract Documents and will not be defective. The CONTRACTOR shall address all defective work in accordance with Part 11.
- B. Neither the final certificate of completion, final payment, acceptance of the premises by the OWNER, nor any provisions of the Contract, nor any other act or instrument of the OWNER or PROJECT ENGINEER shall relieve the CONTRACTOR from responsibility for negligence, or faulty materials, or workmanship, or failure to comply with these Contract Documents.

12.06 Final Payment

- A. Application for Final Payment
 1. After CONTRACTOR has, in the opinion of PROJECT ENGINEER, satisfactorily completed all items identified during the final inspection and has provided all completion documents required in accordance with the Contract Documents the CONTRACTOR may make application for final payment.
 2. The final Application for Payment shall be accompanied by:
 - a. All documentation called for in the Contract Documents;
 - b. AIA document G707, "Consent of Surety Company to Final Payment;"
 - c. Complete and legally effective releases or waivers of all Lien rights arising out of or Liens filed in connection with the Work, (AIA document G706A,

“Contractor’s Affidavit or Release of Liens” and AIA document G706, “Contractor’s Affidavit of Payments of Debts & Claims”, or similar form) in accordance with Chapter 44A of the North Carolina General Statutes.

3. Notwithstanding any other provision of these Contract Documents to the contrary, the OWNER is under no duty or obligation whatsoever to any Subcontractor, laborer, or other party to ensure that payments due and owed by CONTRACTOR to any of them are or will be made. Such parties shall rely only on CONTRACTOR’s surety bonds for remedy of nonpayment by CONTRACTOR.

B. Review of Application

1. Once the PROJECT ENGINEER is satisfied that the Work has been completed and CONTRACTOR’s obligations under the Contract Documents have been fulfilled, PROJECT ENGINEER will, within ten (10) business days indicate in writing PROJECT ENGINEER’s recommendation of payment and present the Application for Payment to OWNER for payment. Otherwise, PROJECT ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty (30) calendar days after the presentation to OWNER of the Final Application for Payment the amount recommended by PROJECT ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

12.07 Final Completion Delayed

- A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if PROJECT ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR’s final Application for Payment and recommendation of PROJECT ENGINEER, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted.

12.08 Liquidated Damages

- A. For each consecutive calendar day of delay beyond the time specified for the Contract Completion date, the CONTRACTOR shall be assessed liquidated damages as indicated in the Bid Form. Liquidated damages will be withheld from amounts which may be or may become payable to the CONTRACTOR by the OWNER. Should the cost of these sustained damages exceed the amounts owed by the OWNER, the CONTRACTOR shall pay the difference to the OWNER.
- B. If the progress of completion of the Work is delayed by any fault, neglect, act or failure to act, on the part of the CONTRACTOR or anyone acting for or on the behalf of the CONTRACTOR so as to cause any additional costs, expense, liability or damage to the OWNER or any damage or additional cost or expense for which the OWNER may or shall become liable, the CONTRACTOR shall and does hereby agree to compensate the OWNER for, and to indemnify the OWNER against all such costs, expenses, liabilities and damages.

12.09 Waiver of Claims

- A. The making and acceptance of final payment will constitute:

1. A waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents.
- B. A waiver of all Claims by CONTRACTOR against OWNER, other than those previously made in writing which are still unsettled.

PART 13. SUSPENSION OF WORK AND TERMINATION

13.01 Owner May Suspend Work

- A. At any time and without cause, OWNER may suspend the Work or any portion thereof by providing written notice to CONTRACTOR. CONTRACTOR shall resume the Work as directed by OWNER. CONTRACTOR may be allowed an adjustment in the Contract Price or an extension of the Contract Time, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefore as provided in Part 8. An adjustment to the Contract shall only be considered if the CONTRACTOR was delayed for a time period greater than twenty-four (24) hours.
- B. If OWNER stops work under Part 11, or excludes CONTRACTOR from the Site, suspends CONTRACTOR's services, or suspends the Work or any portion thereof because of CONTRACTOR's failure to perform the Work in accordance with the Contract Documents, CONTRACTOR shall not be entitled to an extension of Contract Time.

13.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will justify termination for cause:
 1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents;
 2. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction;
 3. CONTRACTOR's disregard of the authority of OWNER; or
 4. CONTRACTOR's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified above occur, OWNER may, after giving CONTRACTOR and the surety seven (7) calendar days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere and finish the Work. In such case, CONTRACTOR shall not be entitled to receive any further payment.
- C. If all claims, costs, losses, and damages (including but not limited to all the fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other disputed resolution costs) exceeds the unpaid balance of the Contract, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by PROJECT ENGINEER and, when so approved, by PROJECT ENGINEER,

incorporated in a Change Order. When exercising any rights or remedies under this paragraph, OWNER shall not be required to obtain the lowest price for the Work performed.

- D. Where OWNER has terminated CONTRACTOR's services, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.
- E. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or from such termination.

13.03 Owner May Terminate For Convenience

- A. Upon seven (7) calendar days written notice to CONTRACTOR the OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):
 - 1. For completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. For expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. For all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. For reasonable expenses directly attributable to termination as approved by OWNER.

13.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than ninety (90) consecutive calendar days by OWNER or under an order of court or other public authority, or PROJECT ENGINEER fails to act on any Application for Payment within thirty (30) calendar days after it is submitted, or OWNER fails for thirty (30) calendar days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven (7) calendar days written notice to OWNER, and provided OWNER does not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in Part 13. In lieu of terminating the Contract and without prejudice to any other right or remedy, if PROJECT ENGINEER has failed to act on an Application for Payment within thirty (30) calendar days after it is submitted, or OWNER has failed for thirty (30) calendar days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven (7) calendar days after written notice to OWNER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph are not intended to preclude CONTRACTOR from making a Claim under Part 8 for an adjustment in Contract Price or Contract Time or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.
- B. The words "suspended" and "suspension" in Part shall not refer to the legal doctrine known as "constructive suspension" but shall only refer to a stoppage of the Work by express order of OWNER without cause.

PART 14. DISPUTE RESOLUTION – Deleted; Reference Construction Agreement Section 500**PART 15. MISCELLANEOUS****15.01 Cumulative Remedies**

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

15.02 Survival of Obligations

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract.

15.03 Historical or Archaeological Deposits

- A. If, during the course of construction, evidence of deposits of historical or archaeological interest are found, CONTRACTOR shall immediately cease operations affecting the find and shall notify OWNER, who shall notify the State Historic Preservation Officer. No further disturbance of the deposits shall ensue until CONTRACTOR has been notified by OWNER that he may proceed. OWNER will issue a Notice to Proceed only after the state official has surveyed the find and made a determination to OWNER. Compensation to CONTRACTOR, if any, for lost time or changes in construction to avoid the find, shall be determined in accordance with changed conditions or Change Order provisions of the Contract Documents. (Reference: 80 Stat 915, 16 USC 470, and Executive Order No. 11593 of May 31, 1971.)

15.04 Antitrust

- A. By entering into a Contract, CONTRACTOR conveys, sells, assigns, and transfers to OWNER all rights, title, and interest in and to all causes of action CONTRACTOR may now have or hereafter acquire under the antitrust laws of the United States and the State of North Carolina relating to the particular goods or services purchased or acquired by OWNER under the said Contract.

15.05 Lien

- A. It is expressly agreed that after any payment has been made by OWNER to CONTRACTOR for work done, or labor or material supplied as required and described in the Contract, OWNER will have a lien upon all material delivered to the site by or for CONTRACTOR or any Subcontractor.

15.06 Employment Discrimination

- A. During the performance of this Contract, CONTRACTOR agrees as follows:
1. CONTRACTOR will not discriminate against any employee or applicant for employment because of race, religion, color, sex, disability, or national origin, except where religion, sex, disability, or national origin is a bona fide occupational qualification reasonably

necessary to the normal operation of CONTRACTOR. CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

2. CONTRACTOR, in all solicitations or advertisements for employees placed by or on behalf of CONTRACTOR, will state that such CONTRACTOR is an equal opportunity employer.
 3. Notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for meeting the requirements of this section.
- B. CONTRACTOR will include the provisions of the foregoing Paragraphs 1, 2, and 3 in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each Subcontractor or vendor.

***** END OF SECTION *****

00730 | SUPPLEMENTAL GENERAL CONDITIONS

These Supplemental Conditions are intended to supplement and amplify Section 00700 - General Conditions of these Contract Documents. Where any article or item of the General Conditions is modified or deleted by these Supplemental Conditions, the remaining unaltered provisions of that article, paragraph, subparagraph, or clause shall remain in effect. Where a specific section is not mentioned below, it shall remain in full effect as written. In the event of a conflict, these Supplemental Conditions shall take precedence.

SC-3.01 "Availability of Lands"

Delete paragraph 3.01.A in its entirety and insert the following new paragraph in its place:

- A. OWNER shall be responsible for obtaining all required easements and encroachments necessary to complete the Work, except as provided herein. If there is any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim as provided in Part 8.

SC-3.02 "Subsurface and Physical Conditions"

Delete the first sentence of Paragraph 3.02.A. and replace it with the following:

- A. Appendix B of these Contract Documents include:

SC-3.06 "Hazardous Environmental Condition at Site"

Delete paragraphs 3.06.A and 3.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to OWNER.

01000 | SPECIAL CONDITIONS**Article 1 – GENERAL EXPECTATIONS**

1.01 Availability

- A. The Contractor shall be capable of providing crews as needed to complete the work without undue delay and shall begin work within 15 calendar days from the written Notice to Proceed (NTP).
- B. It is expected that the Contractor will remain in the project area for the duration of the Contract.

1.02 Public Relations and General Customer Service

- A. The Contractor shall make every effort to minimize inconvenience to customers, pedestrians, vehicular traffic, and businesses. The Contractor shall promptly respond to any concerns expressed by customers and/or PWC personnel, and the Contractor shall make every effort to resolve concerns immediately. The Contractor shall cooperate fully with PWC personnel. Exemplary customer service shall be incidental to this Contract.
- B. The Contractor shall schedule and stage construction in a sequence to minimize disruption to the largest number of customers for the shortest period of time. Special considerations shall be given to the neighborhood solid waste and trash collection schedule, mail delivery, and bus routes.
- C. The Contractor shall ensure that pedestrians have access to adequate and compliant pedestrian pathways. The Contractor shall construct and maintain any necessary ramps, boardwalks, or other means to maintain pedestrian traffic. Temporary pedestrian pathways shall be constructed to accommodate persons with limited mobility and those who utilize assistive devices. Costs for maintaining pedestrian traffic shall be incidental to the Project.

1.03 Contractor's Personnel

- A. Profanity, abusive language, and obscene gesturing will not be tolerated and will be just cause for immediate dismissal of the offending person from the worksite as directed by PWC or its authorized representative.
- B. An English-speaking Contractor's representative is required to for each separate work crew.
- C. A sufficient number of portable toilets shall be provided for workers. These facilities shall be placed discretely out of public view, and they shall be kept clean and orderly.
- D. All personnel employed by the Contractor or by subcontractors shall adhere to all posted speed limits (including time-dependent school zone speed limits).

1.04 Subcontractors

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

1.05 Safety of the Public

- A. Much of the Work takes place within a public park near walking trails and a disc golf course. The Contractor shall protect the Work to keep the public at large safe from injury. Any damage or injury due to the lack of proper protection or from Contractor's negligence shall be the Contractor's sole responsibility.

- B. The Contractor shall provide measures to barricade or otherwise protect hazardous areas when the Work is not in progress. If Work is temporarily halted during the workday, any open trenches shall be manned continuously.

1.06 Cleanliness During Construction

- A. 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. 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 their operations. No separate payment shall be made for maintaining a clean project site.
- B. The Contractor shall control the dust in all areas of the project limits for the entire duration of construction. Dust control may be accomplished by use of either water or dust control materials, or as directed by the PWC Project Engineer. No separate payment shall be made for dust control.
- C. The Contractor shall remove all construction equipment, barricades, tools, surplus materials, etc. no longer required at the site.
- D. Failure of the Contractor to maintain a clean site will be basis for PWC to issue a written notice of non-compliance with the Contract. If the Contractor does not take corrective measures within 24 hours after Notice, PWC may authorize the cleanup to be performed by others, and the costs shall be deducted from monies due the Contractor.

1.07 General Working Times

- A. Regular working hours shall be between the times of 8:00 am and 5:00 pm, Mondays through Fridays, excluding holidays observed by PWC.
 - 1. Holidays observed by PWC include New Year's Day, Martin Luther King's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving (2 days), and Christmas (2 days).
 - 2. The Contractor shall plan daily activities to ensure that all Work (including daily cleanup) is completed by 5:00 pm. This provision will be strictly enforced by PWC.
- B. Work shall not be performed on weekends or after hours, unless specifically authorized in writing by the PWC Project Engineer.
 - 1. Requests to work outside regular working hours must be submitted in writing to the PWC Project Engineer a minimum of two (2) full business days in advance of the anticipated Work. The written request shall include a proposed schedule for the Work to be completed.
 - 2. Requests shall be approved only if the PWC Project Engineer determines that the Work cannot be performed during regular working hours because of traffic, operations of other utility owners, public convenience, coordination with other contracts, or coordination with the City of Fayetteville's capital improvement projects.
 - 3. The costs for such Work shall be considered incidental to the Project and no additional payment will be made.
 - 4. Inspector overtime shall be charged if the Contractor works outside of regular working hours. 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 PWC Project Engineer.

1.08 Contractor's Responsibility for Work

- A. Until final acceptance by PWC, the project site and all the Work shall be the responsibility of the Contractor. The Contractor shall take every precaution to prevent damage to the project site, Work, and the surrounding areas. It shall be the responsibility of the Contractor to address any damage or injury arising from their direct or indirect performance on this project.
- B. The Contractor shall be responsible for maintaining the project site at all times. The Contractor shall also be responsible for ensuring that the Work is installed and maintained in accordance with these Contract Documents until accepted by PWC. This paragraph does not supersede the requirements of the general warranty.

1.09 Responsibility for Material

- A. All pipe, fittings, and other materials shall be inspected upon arrival at the job site by a competent superintendent before unloading to ensure that the quality of the materials conform to the specifications. All materials shall be subject to inspection by PWC.
- B. Materials found to be defective shall be clearly marked to assure the necessary repairs are made, if approved by the PWC Project Coordinator. If approved, the material is incorporated in the work or replaced with sound material without additional expense to PWC.
- C. It is the Contractor's responsibility to verify all materials and dimensions before beginning Work.
- D. The Contractor shall provide submittals in accordance with *Section 1300 – Submittals Procedures*.

Article 2 – SITE ACCESS

- 2.01 Access to the Work shall be via designated easements and right-of-entry limits agreed upon with the City of Fayetteville. The Contractor shall not operate beyond these limits except where expressly permitted by an authorized Property Owner Agreement.
- 2.02 Any work performed within Mazarick Park shall remain within the approximate extents shown on the right-of-entry map in *Appendix A*. Any disturbance within Mazarick Park shall remain within the Limits of Disturbance as shown in the Contract Drawings.
- 2.03 Temporary Construction Easements – Where PWC has obtained temporary construction easements, those easements will be delineated on the Contract Drawings. The Contractor shall limit the use of the temporary easements to only what is necessary to complete the Work as outlined in these Contract Documents.

Article 3 – CUSTOMER COORDINATION

- 3.01 The Contractor shall be responsible for notifying customers of the Work. The Contractor shall coordinate the Work, as much as practical, to meet any special requirements of the customers.
- 3.02 Driveways and parking areas shall not be blocked without prior notification and coordination with customers. Access to businesses shall be maintained.
- 3.03 Entering Mazarick Park
 - A. The Contractor shall notify the City of Fayetteville and PWC regarding intent to begin construction in Mazarick Park a minimum of fourteen (14) calendar days in advance of the need to work within the park. The contact for the City of Fayetteville is:

Michael Gibson
MGibson@ci.fay.c.us
(910) 433-1557

- B. The Contractor may utilize the approximate designated area of Mazarick Park for staging, as shown in the Drawings.
- C. The Contractor shall not occupy for purposes of construction the upper or lower parking lots in Mazarick Park, unless coordinated with and provided permission by the City of Fayetteville.

3.04 Entering Private Areas

- A. The Contractor shall not enter back yards, fenced areas, or areas that may be deemed private or personal – regardless of easements or rights-of-way held by PWC – without consent from the property owner and the PWC Project Coordinator.
- B. The Contractor shall coordinate with the PWC Project Coordinator to notify residents a minimum of 7 calendar days in advance of the need to work in areas that may be deemed private or personal.

3.05 Protection of Personal Property

- A. The existence of a utility easement or right-of-way does not give the Contractor uninhibited license to damage or disturb personal property within the easement or right-of-way. The Contractor shall protect from disturbance or damage all personal property and property corners.
- B. When any damage or injury is done to public or private property as a result of any act, omission, neglect, or misconduct on the part of the Contractor during the execution of the Work, the Contractor shall make good, at no cost to PWC, such damage or injury in a manner acceptable to the property owner and to the PWC Project Engineer. Restoration of property shall be to a condition equal to or better than the condition prior to starting Work.
- C. The Contractor shall solely be responsible for damage to property outside the limits of the Work. Any and all additional access rights-of-way not obtained by PWC shall be the responsibility of the Contractor. The Contractor shall be liable for all damages resulting from access usage.

3.06 Encumbrances by Residents

- A. Before starting Work at a designated Work area, the Contractor shall visit the location and shall notify residents, in writing, of any obstacles or conditions which impede completion of the Work (such as fences, vehicles, sheds, dog pens, etc.). If encumbrances exist, the Contractor shall document the existing site conditions (picture and/or video) prior to construction and provide a copy of the documentation to the PWC Project Engineer. These photographs and videos may be used for purposes of restoration documentation.
- B. Known Encumbrances

- 1. **Brian A. Carpenter**
814 Shadowlawn Drive
PIN: 0428-71-0465
Sheet C3

Contractor shall install a temporary fence to enclose the existing yard outside the area of construction. The temporary fence must be sufficient to safely contain the property resident's dog or applicable pets. The temporary fence shall remain in place for the duration of construction. Following construction, a permanent fence shall be installed, matching the location, type, and quality of the fence that was in place prior to construction.

A metal shed is located on this property, partially within the Temporary Construction Easement. Contractor shall protect the metal shed during construction. If metal shed is damaged during

construction, it must be repaired or replaced with a shed matching the location, type, and quality of the original shed.

There is a stormwater line, outlet headwall, and surrounding stone wall on this property near the aerial line. If this is damaged during construction, it must be repaired or replaced with a stormwater line, outlet headwall, and stone wall matching the materials and quality of the originals.

This property includes a concrete driveway that must not be disturbed. If the concrete driveway is damaged during construction, the Contractor shall replace the damaged section from seam to seam, taken back to the nearest joint.

A gate will be added to the property owner's fence where indicated on the Drawings. The gate must match the materials and quality of the owner's existing fence.

The home, deck, and other structures located on this property are outside the limits of disturbance and shall not be disturbed during construction. A structural inspection was performed on the external, northern wall of this home. The report containing this structural inspection can be found in *Appendix H*.

2. Shasta T. Holt
818 Shadowlawn Drive
PIN: 0428-71-0592
Sheet C3

Contractor shall install a temporary fence to enclose the existing yard outside the area of construction. The temporary fence must be sufficient to safely contain the property owner's dog or applicable pets. The temporary fence shall remain in place for the duration of construction. Following construction, a permanent fence shall be installed, matching the location, type, and quality of the fence that was in place prior to construction.

A wooden bridge has been installed over the stream east of the fence on this property. Contractor shall protect wooden bridge during construction. If wooden bridge is damaged during construction, it must be repaired or replaced with a bridge matching the location, materials, and quality of the original bridge.

A wooden tree house is located near the construction site. The tree house is outside the limits of disturbance and shall not be disturbed during construction.

A pond is located on the property. The Contractor shall remove the pond during construction. Contractor staff is advised to wear appropriate personal protective equipment to prevent snake bites during work as water moccasins have been observed in and around the existing pond. No replacement of the pond is required.

A wooden pergola, anchored with concrete, is located on this property. The Contractor shall coordinate with the property owner prior to removing the pergola to determine whether the pergola should be replaced or relocated. If pergola cannot be relocated, Contractor shall coordinate with property owner to have existing pergola hardware removed prior to demolition.

Two (2) specific large plants are located near the back gate of this property. Property owner preference is to relocate existing plants. Prior to construction, the Contractor shall coordinate with the property owner to determine whether the plants can be relocated.

This property includes a concrete driveway that must not be disturbed. If the concrete driveway is damaged during construction, the Contractor shall replace the damaged section from seam to seam, taken back to nearest joint.

The home, deck, and other structures are outside the limits of disturbance and shall not be disturbed during construction. A structural inspection was performed on the external, southern wall of this home. The report containing this structural inspection can be found in *Appendix H*.

3. Murray G. and Ethel F. Grantham
834 Shadowlawn Drive
PIN: 0428-71-2836
Sheet C2

A gate will be added to the fence on this property per the project Drawings. If the existing fence is damaged during construction a replacement for the damaged section must be installed, matching the location, type, and quality of the original fence.

4. Anita L. Brown
830 Shadowlawn Drive
PIN: 0428-71-2724
Sheet C2

This property includes a concrete driveway with a drainage flume. These features shall not be disturbed. If the concrete driveway or drainage structure is damaged during construction, the Contractor shall replace the damaged concrete flatwork, going back to the nearest joint from the damaged area.

A gate will be added to the fence on this property per the project Drawings. If the existing fence is damaged during construction a replacement for the damaged section, from support to support, must be installed, matching the location, type, and quality of the original fence.

5. Joel A. and Mary S. Angarita
1901 N Pearl Street
PIN: 0428-71-3830
Sheet C2

Following construction, a permanent fence shall be installed, matching the location, type, and quality of the fence that was in place prior to construction.

- C. If the issues regarding encumbrances still exist after good faith efforts by the Contractor, the Contractor shall notify the PWC Project Engineer. If necessary, PWC may be able to provide assistance and coordination with residents in an attempt to remove the encumbrance. This is not a guarantee that the PWC will provide assistance at all times.

3.07 Agreements with Property Owners

- A. 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 the City of Fayetteville or PWC in any manner.
- B. Prior to performing any Work on private property, which could remotely imply the Contractor acting on behalf of the PWC, the Contractor shall furnish to the PWC a signed and witnessed statement executed by the property owner acknowledging that the City of Fayetteville and PWC are not liable for any agreements between the property owner and the Contractor, and that the Contractor shall hold harmless and defend the City of Fayetteville and PWC from all claims, damages, etc. Additionally, all

agreements and/or actions by any subcontractors shall be the Contractor's responsibility to secure the property owner's agreement as described herein.

- C. 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 the PWC Project Engineer with the final pay application.
- D. The Contractor bears complete responsibility for any damage to private properties outside of easements and/or rights-of-way.

3.08 Customer Notification of Service Interruption

A. Notification of the Work

- 1. PWC will prepare and issue letters to customers, outlining the scope and expected duration of the Project in the vicinity.
- 2. The Contractor shall coordinate with the PWC Project Coordinator to ensure that customers are aware of the Work.

B. Notification of Planned Interruption of Sewer Service

- 1. If the customer's sanitary sewer service must be interrupted by the Work, the Contractor shall notify the customer a minimum of 48 hours in advance of the interruption. This notification shall be accomplished with door hanger notification cards placed at the addresses of the affected customers. Customers shall be informed when service interruption takes place and the expected duration. This notice shall be a minimum 48 hours prior to service interruption. The Contractor shall make every effort to minimize inconvenience to the public and customers.
- 2. Service interruptions to customers shall be limited to no more than eight (8) hours at any given time. The notifications shall clearly describe the work to be undertaken and approximate dates of the work. All notifications shall be clear and legible. The text of the notifications shall be approved by the PWC in advance of the beginning the Work. The Contractor shall coordinate the notification and service interruption with the PWC, prior to issuing notices. All coordination and notification shall be in accordance with PWC requirements.

Article 4 – EXECUTION OF THE WORK – SEWER SYSTEM AND PILE REQUIREMENTS

4.01 General Installation of Sewer Mains

- A. Installation of the water main shall be in accordance with PWC Technical Specification *02730 - Sanitary Sewer Systems*.

4.02 Installation of Piles

- A. Piles shall be installed as shown in Contract Documents, per the requirements of the provided geotechnical report and as shown on the Drawings, in accordance with PWC Technical Specification *02350 - Steel H Piles*.
- B. The Contractor shall comply with the requirements of the Statement of Special Inspections (SSI) for pile submittals and installation. The SSI form can be found attached in *Appendix F*.
- C. The on-site PWC Project Coordinator or PWC's on-site Design Engineer representative shall complete Field Reports over the duration of pile installation. Field Reports pertaining to pile installation will be conducted weekly at a minimum and will represent requirements of the SSI form.

- D. PWC's Design Engineer shall be on site to observe and inspect piles as they are driven. The Contractor shall request the presence of the McKim & Creed Structural Engineer, Mr. Bill Band, PE, at (919) 624-1359. A minimum notice of five (5) business days is required.
1. The Structural Engineer will inspect at least one pile for the 16-inch diameter aerial crossing and at least one pile for the 8-inch diameter aerial crossing.
 2. The Structural Engineer will also inspect at least one pile for the 16-inch diameter aerial crossing and at least one pile for the 8-inch diameter aerial crossing after the pipeline has been installed on the piles.
- E. A Final Report of Special Inspections, documenting completion of all SSIs, testing, and correction of any discrepancies noted in the inspections shall be submitted to PWC's Design Engineer prior to issuance of full Engineering Certification. The Final Report of Special Inspections can be found attached in *Appendix G*.
1. Partial engineering certification may be issued prior to the Final Report of Special Inspections at the discretion of the Owner's representative Construction Administrator.
- F. Third Party Vibration Monitoring During Pile Installation
1. The residences on the properties of 814 Shadowlawn Drive and 818 Shadowlawn Drive are within close proximity to the 8-inch gravity sewer replacement area of the Project. A General Structural Survey of Existing Residences was performed for the residential structures on these properties and can be found in *Appendix H*.
 2. If requested by Owner, the third party testing firm shall install vibrations at no less than four (4) locations per property on the properties of 814 Shadowlawn Drive and 818 Shadowlawn Drive prior to pile installation, and shall monitor them during construction. The selected locations shall be based on the location of construction activities and their relative position to offsite structures. Prior to construction, a plan showing the proposed monitoring locations shall be submitted to the Engineer and Owner for approval. Adjustments may be made to the selected locations upon approval.
 3. The sensitivity range of the seismograph shall be selected such that the recording is initiated below the maximum allowable particle velocity as recommended by the U.S. Bureau of Mines RI 8507 (found in *Appendix K*) with a twenty percent reduction factor applied.
 4. Vibration monitors shall be field calibrated by the testing firm before each recording period. Operation and calibration of all equipment shall be per manufacturer's recommendation.

Article 5 – THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER IMMEDIATELY IF MONITORS INDICATE THAT THE VIBRATIONS ARE ABOVE THE CRITERIA ESTABLISHED. ACTIVITIES CAUSING THE VIBRATIONS SHALL BE MODIFIED IMMEDIATELY TO REDUCE VIBRATORY LEVELS. TEMPORARY BYPASS ACTIVITIES

5.01 General

- A. All temporary bypass activities shall be performed in accordance with PWC Technical Specification 02750 *Wastewater Flow Control*.
- B. Use of temporary bypass lines within the public street right-of-way should be minimized.
- C. Partial certification of the Work is available to allow more efficient temporary bypass measures. McKim & Creed will provide project certification services. The Contractor shall request partial certification from the McKim & Creed Construction Administrator, Mr. Jason Savage, PE, at (919) 417-6199. A minimum notice of five (5) business days is required.

5.02 Flowrates

- A. Flowrates were obtained for purposes of planning temporary bypass flow requirements. This basin experiences minimal wet weather flows from inflow and infiltration.:

1. **SMH011984**

Average daily flow (ADF): 9,720 gpd

Peak flow: 17 gpm

Flows estimated on the basis of GIS data, 270 gpd/residence per PWC design standards, and a peak flow of 2.5 x ADF.

2. **SMH12034**

Average daily flow (ADF): 5,130 gpd

Peak flow: 9 gpm

Flows estimated on the basis of GIS data, 270 gpd/residence per PWC design standards, and a peak flow of 2.5 x ADF.

3. **SMH011999/ SMH012030**

Daily flow: 96,095 gpd

Peak flow: 165 gpm

Flows determined based upon flow meter data recorded from 4/29/21 – 7/29/21.

Article 6 – EXECUTION OF THE WORK – INCIDENTAL WORK

6.01 Preconstruction Video

- A. The Contractor shall complete preconstruction videos of the Project area to document existing conditions.
- B. The preconstruction videos shall show existing features within the limits of construction including streets, curb and gutter, roadside areas, driveways, mailboxes, fences, gates, retaining walls, grass and sod, landscaping, easement areas, any resident installed improvements, and any other items that could potentially be affected by the Work. The Contractor may include still photographs of the areas for additional documentation.
- C. The videos shall identify any relevant house numbers and street names in the audio track and visually. The video shall be accompanied by an index sheet that relates the streets or house numbers to the corresponding video files.
- D. The videos shall be in 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).

6.02 Post-construction Video

- A. Following construction, the Contractor shall visually inspect the following pipelines by means of closed-circuit television:
1. The 8-inch pipeline from proposed manhole *MH#5* to existing manhole *SMH12034*
 2. The 15- and 16-inch pipeline from proposed *MH#1* to proposed *MH#5*
- B. The visual inspection must be performed one manhole section at a time in accordance with current National Associated of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification (PACP) standards.
- C. The videos shall be in 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).

6.03 Disc Golf Course Protection, Removal, and Replacement

- A. Several disc golf baskets, teeing areas, and benches are located near planned construction work within Mazarick Park.
- B. Disc golf baskets, teeing areas, benches, and other implements must be protected during construction; removed prior to construction and replaced in place following construction; or replaced with implements of the same quality and materials following construction. There are no anticipated disc golf course implements other than those shown in the Drawings.
- C. Any disc golf course baskets or concrete pads must be relocated at least ten (10) feet from active sewer lines following construction. Contractor must coordinate with Fayetteville PWC Project Coordinator and City Park representative(s) to determine the new location(s) for disc golf implements which are to be relocated.

6.04 Site Clearing

- A. Outside of the designated Permanent Utility Easement, removal of trees with trunk diameters two (2) inches or larger must be approved by a PWC Project Coordinator.
- B. Removal of trees with trunk diameters two (2) inches or larger within Mazarick Park must be approved by a PWC Project Coordinator.

6.05 Grading, Compaction, Rip-Rap, and Surface Restoration

- A. Fill and grading on the Shadowlawn line shall be performed and compacted in accordance with requirements of *02211 Grading, Utilities* and *02222 Excavation and Backfilling for Utility Systems*.
- B. Fill and grading approximately located between Station 1+65 and Station 3+55, approximately 80 feet north and 60 feet south of the centerline of the 16-inch partially encased alignment, shall be covered with sod per requirements of *02931 - Sod*.
- C. Fill and grading approximately location between Station 5+15 and west of Station 5+30, approximately 35 feet north and 20 feet south of the centerline of the 16-inch partially encased alignment, shall be covered with a medium weight nonwoven geotextile prior to application of rip-rap. The geotextile must meet requirements as outlined in AASHTO M-288-06 for Class 2 applications, such as US Fabrics US 160NW or equivalent. The rip-rap near Station 5+30 of the 16-inch partially encased alignment shall adhere to the requirements for NCDOT Class B rip-rap.
- D. Ground shall be cleared and soil compacted prior to laying rip-rap. Rip-rap shall be laid in a minimum thickness of two (2) feet, at a minimum slope of 2:1, and shall be placed in accordance with best practices provided by the most recent version of the NCDEQ Erosion and Sediment Control Manual and in accordance with the Contract Drawings.

6.06 Restoration

- A. Once construction is completed, the Contractor shall be responsible for restoring the site to as good as, or better than existing conditions. All areas of disturbed soil on private property shall be restored with sod. All other disturbed areas shall be seeded, unless otherwise noted on the Contract Drawings and as directed by PWC.
- B. The Contractor shall be responsible for the full replacement of any driveways or parking lots disturbed as part of his operations. Restoration of driveways and/or parking lots shall be completed in accordance with the applicable PWC standard detail.

- C. Surplus pipe, material, tools, and temporary structures shall be removed by the Contractor. All dirt, rubbish, and other debris from the operation shall be removed and legally disposed of by the Contractor, at no additional cost to PWC.
- 6.07 Demolition (Pipe Removal)
- A. The existing 16- and 8-inch sanitary sewer aerial crossings consist of steel piles and concrete supports as shown in the Contract Drawings. The Contractor shall remove and dispose of the existing pipeline, piles, and supports as shown on the Contract Drawings. Once the crossings have been removed, the material is considered the property of the Contractor and shall be disposed of in accordance with applicable regulations.
- 6.08 Construction Staking
- A. McKim & Creed shall provide construction staking on the project site. The Contractor shall contact the McKim & Creed Construction Administrator, Mr. Jason Savage, PE, at (919) 417-6199 to schedule the construction staking.
- B. A minimum notice of five (5) business days is required.
- C. Cut sheets will be provided to the Contractor. The Contractor shall have a copy of the cut sheets on the job site, and available for inspection by PWC staff.
- 6.09 Work Not Allowed Within Wetlands
- A. Work is allowed within Mazarick Park based upon right-of-entry agreement; however, work within wetlands is not permitted. All work adjacent to wetlands shall comply with the requirements of the NCDEQ erosion and sediment control permit and the Contract documents.
- 6.10 Removal and Replacement of Existing Fencing
- A. The Contractor shall replace all fencing disturbed as part of the Work. Fences shall be replaced using new materials to restore the area to the original condition or better. Unless otherwise noted, costs for removal and replacement of fencing shall be incidental to cost of the Project.
- B. Temporary Fence – When existing fencing is to be removed because of the Work, the Contractor shall install and maintain temporary fencing so that the affected properties remain secure throughout the duration of the Work. The Contractor shall coordinate the installation of temporary fencing and removal of existing fencing with property owners.
- C. Permanent Fence – The Contractor shall install new permanent fencing at the original location. The permanent fence shall be to the same specification as the original fence. The Contractor shall coordinate the installation of the permanent fencing and removal of the temporary fencing with the property owner.
- 6.11 Excavations
- A. Excavation and backfill shall be in accordance with *Technical Specification 02222 – Excavation and Backfilling for Utility Systems*.
- B. Before excavating, the Contractor shall contact the NC One-Call Center (dial 811) for the location of existing utilities within the Project area. The Contractor shall bear the costs of utility repairs, temporary service, and other costs arising out of damage to or interruption of utilities resulting from the Contractor's operations.

- C. All excavations shall be covered when Work is not in progress. Excavations outside of vehicular and pedestrian areas may be covered with whether resistant ¾-inch plywood, if approved by the PWC Project Engineer. All excavations shall be protected from pedestrians.
- D. The Contractor shall be responsible for complying with all applicable OSHA 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 will an employee of the PWC be considered the "competent" person for the operation.

6.12 Vehicle Traffic Control

- A. The Contractor shall provide any and all traffic safety measures as required to satisfy local, state, and federal highway requirements. The Contractor shall coordinate the Work to minimize disruption of traffic and inconvenience to customers and the general public.
- B. All traffic control devices, traffic pattern changes, and road closures shall be approved by the local municipality and/or NCDOT. Contact information for NCDOT or the City of Fayetteville is as follows:
 - 1. Troy Baker (NCDOT): 910-364-0601
 - 2. Ramon Melendez (City): 910-433-1090
- C. The Contractor shall be liable for any damages resulting from negligence in using adequate work zone traffic control. Failure to provide and maintain adequate traffic control devices may result in PWC's refusal to make payment until corrective measures are in place.
- D. Improper signage and traffic control devices will not be allowed. PWC and/or the local agency reserve the right to relocate and/or remove non-conforming signs and devices and to setup proper signs and devices to ensure safety. The cost for such work shall be billed to the Contractor or deducted from the Contractor's payment.

6.13 Pedestrian Traffic Control

- A. Designated pedestrian travel-ways, including park trails and the disc golf course, shall remain open and accessible as much as practically possible. Where the barricades are in or directly adjacent to designated pedestrian travel-ways, the Contractor shall utilize ADA acceptable barricades. When designated pedestrian travel-ways are to be closed, the Contractor shall provide ADA acceptable pedestrian detours.
- B. Excavations within pedestrian travel-ways that are not backfilled at the end of the workday shall be covered or plated with appropriate material to support a minimum uniformly distributed live load of 100 pounds per square foot.

6.14 Protection of Existing Utilities

- A. The Contractor shall take every precaution to guard against any damage to existing structures, pipelines, and/or equipment of the utility owner. Any damage to existing structures and/or pipelines shall be the direct responsibility of the Contractor. Damage shall be replaced and/or repaired by the Contractor as directed by the utility owner, or the value of such deducted from any monies due the Contractor under this Contract.
- B. Utility Interruptions
 - 1. For expected utility service interruptions, the Contractor shall notify the utility owner and the PWC Project Coordinator a minimum of two (2) full business days in advance to coordinate the proposed interruption.

2. If an unscheduled service interruption occurs, the Contractor shall immediately notify the utility owner and the PWC Project Coordinator. The Contractor shall immediately commence repairs in accordance with the utility owner's standards.
- C. Damage to Existing Culverts and Storm Drainage Structures
1. Any damage to storm drainage structures shall be repaired or replaced, as deemed necessary by the PWC Project Engineer and / or PWC Project Coordinator at no additional cost to PWC.
 2. All storm drainage structures and repairs shall be installed in accordance with City of Fayetteville standards, as applicable.
- D. Damage to Existing Sanitary Sewer Facilities
1. If a sanitary sewer service is damaged as a result of the Contractor's operations, the Contractor shall replace the entire lateral, from the main to the clean-out. Installation of the new lateral shall be in accordance with PWC standard detail S.10. Replacement of the lateral includes replacement of the clean-out and re-connecting the service to the customer's existing service, utilizing all necessary fittings. The Contractor may use the existing main to lateral connection, with approval from the PWC Project Coordinator. The PWC Project Coordinator and/or PWC Project Engineer may waive the requirement to replace the sewer lateral in its entirety at their sole discretion.
 2. If a sanitary sewer main is damaged as a result of the Work, the Contractor shall repair the damage in accordance with PWC requirements. The repair shall be in accordance with PWC standard detail S.15, and as directed by the PWC Project Coordinator.
 3. The Contractor shall immediately notify the PWC Project Coordinator when damage occurs. All repairs and replacements shall be in accordance with PWC requirements, and as directed by PWC.
 4. Materials – All ductile iron sewer piping and fittings (to include sleeves) shall have an interior coating of Protecto401 or approved equal. All PVC sewer piping shall be SDR-26.
- E. Crossing Existing or Proposed Utilities
1. The Contractor shall conduct their operations so that the following requirements are adhered to:
 - a. Underground telephone, cable TV, and gas utilities or conduit banks shall be crossed maintaining a minimum of 12 inches separation or clearance.
 - b. Electrical crossings shall be performed while the conductor is de-energized and at all times in the presence of the utility owner. Electrical crossings shall be in accordance with NESC Requirements. Electrical primary conductor crossings shall be as follows:
 - i) Crossing over a conductor, maintain a minimum of 12 inches of undisturbed soil encasing the conductor.
 - ii) Crossing under a conductor shall be accomplished by boring, maintaining 12 inches of undisturbed soil encasing the conductor.

6.15 Testing Requirements

A. General

1. The Contractor shall provide all equipment, materials, personnel, traffic control and all means necessary to perform all testing and inspection.

2. The Contractor shall coordinate and fully cooperate with the PWC Project Coordinator when scheduling testing. The Contractor shall provide a minimum of two (2) business days notice when scheduling testing with the PWC Project Coordinator.
3. If the same line segment and/or manhole fails the required testing more than two (2) times, the Contractor shall be charged a fee of \$100.00 per test, beginning with the 3rd attempt, until a passing test is achieved. The fee shall be deducted from the Contractor's monthly pay application.

B. Pre-Testing

1. The Contractor shall perform all sewer system pre-testing satisfactorily prior to scheduling the test to be observed by the PWC Project Coordinator.
2. Pre-testing shall include mandrel pulling; vacuum testing manholes; and air/pressure tests for sewer mains and laterals.

C. Testing – Buried Pipes

1. The Contractor shall coordinate and fully cooperate with the PWC Project Coordinator when scheduling testing. The Contractor shall provide a minimum of two (2) business days' notice when scheduling testing with the PWC Project Coordinator. All testing shall be in accordance with PWC technical specifications.
2. All sewer mains, water mains, and water laterals shall be tested to the satisfaction of the Fayetteville Public Works Commission, prior to being placed into service.
3. The Contractor shall provide all equipment, materials, personnel, traffic control and all means necessary to perform all testing and inspection at no additional costs to the Fayetteville Public Works Commission. If the same line segment and/or manhole fails the required testing more than two (2) times, the Contractor shall be charged a fee of \$100.00 per test, beginning with the third attempt, until a passing test achieved.

D. Testing – Aerial Pipes

1. In areas where the sewer is aerial, specialized hydrostatic testing shall be performed as described below prior to being placed into service.
2. Each aerial or partially aerial gravity line shall be hydrostatically tested to a pressure of 60 psi. No allowable leakage is allowed over a two (2) hour period. All tests shall be performed in the presence of the Owner and/or Engineer. The Contractor will furnish all personnel, facilities, and equipment necessary to conduct the testing.

E. Mandrel Testing – C900 PVC

1. In areas where the sewer is C900 PVC, a specialized mandrel shall be fabricated to meet the requirements of mandrel testing as described in *Section 02730 Sanitary Sewer Systems*.
2. No separate payment for fabrication of the specialized mandrel shall be made.

6.16 Compaction Requirements

- A. Testing service responsibilities and the Contractor's responsibility for quality control is defined in *Technical Specification 01400 – Quality Control*.
- B. The testing requirements listed below specifically pertain this to project. This procedure shall be used at all times, unless otherwise modified by the PWC Project Coordinator and/or PWC Project Engineer.

- C. Tests for density of compaction are made at the sole direction of the PWC Project Engineer or the PWC Project Coordinator. All deficiencies shall be corrected by the Contractor without additional cost to the Owner. The following outlines the requirements for compaction testing:
 - 1. For compaction testing of backfill during sewer installation: Perform one (1) test series each for every section of buried sewer main between manholes and one (1) test series for area of grading. The required method of testing will be sand cone test.
- D. If a compaction test fails, the Contractor, at his option and cost, can perform two (2) additional tests fifteen (15) feet on either side of the failing test. If those two tests pass, the Contractor is required to re-excavate and re-compact that section between the passing tests. If one (1) of the tests fails, the Contractor shall re-excavate and re-compact from the passing test to the next manhole. If both tests fail, the Project Coordinator has the sole option to require another compaction test deeper within the zone (i.e., 95% compaction). This additional test shall be done at the Owner's cost. Should this additional test fail, the Contractor shall re-excavate and recompact the entire zone from manhole to manhole. Should the Project Coordinator elect not to complete an additional compaction test at a deeper depth, the Contractor shall re-excavate and recompact the entire section at the test elevation, from manhole to manhole. Any section re-excavated and re-compact shall be re-tested in accordance with these specifications. Each retest (bracket or otherwise) will be at no cost to the Owner. Contractor will only receive payment for mainline pipe if it has passed compaction testing requirements.
- E. Results of compaction testing shall be submitted to the PWC Project Engineer for review and acceptance.

6.17 Existing Condition Structural Inspections

- A. Structural inspections have been performed by Fleming & Associates, PA to determine the existing conditions of the northern exterior wall at 814 Shadowlawn Drive and the southern exterior wall at 818 Shadowlawn Drive.
- B. The structural inspection report can be found attached in *Appendix H*.

6.18 Restoration and Cleanup

- A. Once construction is completed, the Contractor shall be responsible for restoring the site to as good as, or better than existing conditions.
- B. All exposed areas are to be replaced with vegetation to protect against erosion, in accordance with the Soil Erosion and Sediment Control requirements. The Contractor shall use either sod or seed as specified on the Contract Drawings.
- C. The Contractor shall remove surplus pipe, material, tools, and temporary structures. The Contractor shall properly dispose of all dirt, rubbish, and other debris in accordance with applicable laws, regulations, and rules.

Article 7 – PERMITS AND WORK RESTRICTIONS BY OTHER AGENCIES

7.01 Sewer Extension Construction Permits

- A. PWC has issued a sewer permit for construction of the 8-inch and 16-inch sewer main. A copy of the permit is included in *Appendix D*.
- B. The Contractor shall post the sewer permit placard on site and shall have a copy of the permitted set of plans on site at all times.

7.02 Bulk Water Usage Permit

- A. PWC will allow the Contractor to use water from the existing water system in accordance with the following:
1. A Bulk Water Hauler (BWH) permit must be purchased from the PWC Customer Service Center (955 Old Wilmington Road). The Contractor shall contact PWC's Environmental System Protection Department (910-223-4699) or visit <https://www.faypwc.com/hydrant-use-permitting/> for more information regarding the BWH permit process. The permit fees are subject to change. The Contractor shall contact the PWC Customer Service Center at 910-483-1382 to obtain the most current fees.
 2. The Contractor shall adhere to all requirements of the BWH permit, including utilization of proper backflow prevention and proper metering and documentation of water used.
 3. The Contractor shall provide documentation on the amount of water used for operations, and shall provide a monthly statement to the PWC Project Coordinator.

7.03 Erosion and Sedimentation Control / Construction Stormwater Permit

- A. This project require an erosion and sedimentation control permit approved by NC Department of Environmental Quality (NCDEQ). This permit can be found in *Appendix E*.
- B. The Contractor shall be responsible for following the requirements of the NCDEQ Erosion and Sediment Control permit and for implementing and maintaining best management practices for erosion and sedimentation control at the Site.
- C. The Contractor shall be fully responsible for all fees, penalties, fines for non-compliance, and/or civil actions resulting from sediment leaving the site. The Contractor shall immediately notify the PWC Project Engineer of any notice of non-compliance relating to erosion or sedimentation. If the Contractor is required to modify or supplement the measures, it shall be at no additional cost to PWC.
- D. Erosion and sedimentation control measures that may be required for staging areas, haul roads, bypass lines, etc. shall be at the Contractor's expense and shall not constitute additional compensation.

Article 8 – MATERIALS REQUIREMENTS

8.01 Ductile Iron Pipe in Casing

- A. All sewer main pipe that is installed inside casing pipe shall be factory restrained joint ductile iron pipe – that is, all restraints shall be internal to the pipe. The use of mechanical restraints (i.e., mega-lugs, Field Lok gaskets, etc.) inside casing pipe shall not be permitted. Factory restrained joint ductile iron pipe and fittings shall be U.S. Pipe's TR-Flex, Griffin Pipe Products SNAP-LOK, or American Cast Iron Company's Flex Ring Joint.

8.02 Aerial Ductile Iron Pipe (Not in Casing) and Coating

- A. Aerial pipeline with no encasement shall be installed with alternately flanged and factory restrained joints in order to minimize deflection between pipes, as shown on the Contract Drawings.
- B. Aerial pipeline that is not protected by a casing shall have a field-applied coating. The coating system shall comply with requirements in *09960 – Aerial Crossings High Performance Coatings*.

8.03 Steel Casing Pipe

- A. Steel casing pipe shall comply with requirements shown on Contract Drawings.

- B. Steel casing pipe shall be coated per requirements in *09960 - Aerial Crossings High Performance Coatings*.

8.04 Casing End Seals

- A. Casing end seals shall be brick and mortar, per PWC standard detail M.6.

Article 9 – SPECIAL PROCEDURES

9.01 Water Quality Emergency Response

- A. A water quality emergency situation, as it relates to the collection and distribution systems, is characterized as a water main break, an unexpected depressurization of the water system, a sanitary sewer overflow (or an eminent overflow), or similar situation which would potentially jeopardize water quality.
- B. The Contractor shall maintain a crew capable of immediately performing water quality emergency repairs 24 hours a day, seven (7) days a week, including all holidays.
- C. The Contractor shall provide phone numbers for at least three (3) individuals in responsible charge (capable of making company binding decisions) to be available 24 hours a day, seven (7) days a week, including holidays. The emergency phone numbers and responsible individuals' names shall be furnished to the PWC Project Engineer at the pre-construction conference.
- D. If PWC becomes aware of a water quality emergency situation caused by the Contractor, PWC will contact the Contractor, and the Contractor shall immediately commence repairs. If the Contractor becomes aware of a water quality emergency situation, the Contractor shall immediately contact the PWC Project Coordinator, and the Contractor shall immediately commence repairs.

9.02 Sanitary Sewer Spill Response

- A. If the Contractor becomes aware of any sewer spill or sewer overflow (including spills or overflows that are not a result of the Contractor's operations), the Contractor shall immediately contact the PWC Project Coordinator. If the PWC Project Coordinator does not immediately respond, the Contractor shall contact:
 - 1. During normal business hours: PWC Water Resources Construction (910-223-4715); or
 - 2. Outside of normal business hours: PWC Dispatch (910-678-7400 or 910-223-4494).
- B. Where the spill is the result of the Contractor's operations, Contractor shall be solely responsible for all costs associated with the spill, including: proper cleanup, repair and/or replacement of damages, occupant accommodations, fines, insurance, spill remediation, and legal costs.

9.03 Safety Requirements When Working Near Water

- A. Contractor's safety plan shall include provisions for safely working near water. Contractor shall employ a competent person that will assess potential hazards associated with working near water, such as bank destabilization.
- B. Before beginning work in a particular area, Contractor's competent person shall evaluate the area for hazards associated with working near water and shall keep a log of each evaluation. Upon request from the PWC Project Engineer or the PWC Project Coordinator, the Contractor shall submit the log for inspection.

9.04 Safety Reporting

- A. Hazards

1. If the Contractor discovers a safety hazard that had not previously been identified, the Contractor shall immediately stop Work and shall contact the PWC Project Engineer. The PWC Project Engineer and the PWC Safety Office will determine the appropriate course of action to remove the hazard.

B. Injuries and Incidents

1. The Contractor shall immediately report any Work related injuries or safety incidents to the PWC Project Coordinator and the PWC Project Engineer. The PWC Project Engineer will notify the PWC Safety Department.

9.05 Residential/ Commercial Complaints

- A. The Owners' Complaint Resolution Procedure shall be implemented at the start of construction and shall continue to be followed until the project is completed. The Contractor is required to maintain good public relations and to provide timely notifications to residents and/or commercial property owners so as to minimize inconvenience and complaints.
- B. The Owner has an established protocol for addressing complaints. The Contractor shall be responsible for familiarizing himself and his subcontractors with this protocol. During the course of the Work, the Contractor shall immediately respond to requests from the Owner to address resident and/or commercial property complaints. The Contractor shall inform his personnel and subcontractor personnel that all complaint issues be directed to the Project Coordinator and the Contractor's Superintendent. The Project Coordinator shall be present in all meetings. Should the Project Engineer determine the Contractor(s) non-responsive in addressing complaints, the Owner reserves the right to withhold progress payments until the complaint has been satisfied. The Contractor shall immediately notify that Project Coordinator of any complaint received.

9.06 Claims Procedure

- A. The Owner shall notify the Contractor of all potential claims related to the Work within seven (7) calendar days of receiving notification. Should the Contractor receive a potential claim related to the Work, the Contractor shall notify the Owner within seven (7) calendar days of receiving notification. The Contractor shall provide Claimant and Owner a written response acknowledging receipt of the claim within seven (7) calendar days.
- B. If the Contractor meets with the Claimant about the claim, the Project Coordinator or Project Engineer shall be present at all times. The Owner shall maintain a record of any claim received, and the steps taken to resolve. The Owner shall also concurrently investigate each case. The Contractor agrees to furnish the Owner any information regarding the claim, the actions which led to the claim and/or the investigation of the claim. The Contractor agrees to indemnify and hold the Owner and the Design Engineer harmless for any damage arising out of said claims. Contractor shall provide their proposed response to the Owner within thirty (30) calendar days of receiving the claim. Upon receipt of the response the Owner and the Contractor will discuss and reach a mutual agreement of the response necessary to send to the Claimant within fifteen (15) calendar days. Once the agreement is made the Contractor shall make a formal written resolution to the Claimant.
- C. Failure to act in good faith or respond to a claim in the timelines established by the Owner will constitute a lack of response by the Contractor, therefore validating the claim. The Owner will deduct the total amount of the claim from the monthly pay application. Failure to comply with the above requirements for resolving claims may, at the sole discretion of the Owner, result in Breach of Contract.

- D. The Contractor is aware of Owner's Contractor Related Claims Procedure and understands that it is the Owner's practice to pursue reimbursement/subrogation for any and all claims related expenses, which are incurred as a result of the Contractor's performance under this agreement and allowed within the applicable Statue of Limitations.

Article 10 – CLOSEOUT**10.01 Final Inspection/Acceptance of Work**

- A. 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 30 calendar days of receipt. Failure to complete the punch list in that time may result in liquidated damages being assessed. 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.
- B. Prior to the final inspection, the Contractor shall complete the following (No separate payment shall be made for this work):
1. Verify all manholes are accessible and can be opened.
 2. Complete all restoration.
 3. Complete all required testing.
 4. Complete the Final Report of Special Inspections (to be submitted to Design Engineer per item 4.02 E).
- C. 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 PWC Project Engineer.
 2. Satisfactorily resolve all customer complaints and obtain the required releases.
 3. Provide project record drawings.
 4. All post-construction inspection videos.

10.02 Record Drawings

- A. Upon completion of the Work, the Contractor shall provide one 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. Change in pipe material
 2. Size, depth, and installed elevations of mains.
 3. Location of valves, laterals, blow-offs, and other appurtenances
- B. 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 PWC Project Engineer in an acceptable form.

Article 11 – ADMINISTRATIVE REQUIREMENTS

11.01 Temporary Storage

A. Stored Materials

1. All materials shall be stored in accordance with manufacturer's specifications and in accordance with state and federal laws. All containers shall be properly labeled and shall be accompanied by all applicable Safety Data Sheets. The PWC Project Coordinator shall be made aware of all hazardous or toxic materials.
2. There will be no payment for stored materials for this Contract.

B. Staging Areas

1. The Contractor shall be required to secure staging areas for storing materials and equipment. All costs, such as rent, restoration, erosion control measures, and permit fees shall be the responsibility of the Contractor. The location and operation of the staging areas shall comply with all applicable federal, state, and local regulations.
2. The Contractor takes sole liability for the safeguarding and security of its equipment, materials, and any other items stored. PWC is in no way responsible for any items the Contractor stores at their staging area.

11.02 Preconstruction Meeting

- A. PWC will host a preconstruction meeting following the issuance of Notice of Award. PWC will contact the Contractor to establish a mutually agreeable date and time to conduct the meeting.
- B. The purpose of the meeting is to discuss general Project items, including, Contractor's responsible person and contact information, emergency contact information, submittal schedule and requirements, Contract requirements, safety, access and/or coordination issues, Notice to Proceed, Project schedule, sales tax certificate, applications for payment, warranty requirements, site restoration and clean-up.

11.03 Progress Meetings

- A. The Contractor and the PWC Project Engineer shall mutually establish a regular time to meet on a monthly basis for the duration of the Project. The meetings shall be held at the PWC complex at 955 Old Wilmington Road unless otherwise specified, and will generally last about an hour.
- B. The purpose of the meeting is to discuss various Project related items, including, but not limited to: safety concerns, overall project status and schedule, the Contractor's upcoming schedule, issues that the Contractor and/or the PWC Project Engineer need to address, viewing of pre and/or post lining videos, and any proposed or potential change orders.
- C. The Contractor's superintendent or designated representative shall attend the meeting. The Contractor's representative shall be knowledgeable of the project, issues that need to be addressed, and shall be able to make binding decisions for the Contractor.
- D. At each monthly progress meeting, the Contractor shall provide the PWC Project Engineer and the PWC Project Coordinator with a schedule for the upcoming month. The monthly schedule shall outline the Work planned for the upcoming month and shall include dates, working hours, and any applicable comments.

11.04 Billable Quantities

- A. Pay periods shall be monthly. Billable quantities for each pay period shall be counted through the last Friday of the month. Throughout each pay period, the Contractor shall review billable quantities with the PWC Project Coordinator to ensure payment will be made for those items.
- B. Prior to submitting application for payment, the Contractor and the PWC Project Coordinator shall agree upon the billable quantities for that pay period, and each shall sign the billable quantities sheet. One copy of the signed billable quantities sheet shall be provided to the Contractor and one copy shall be provided to the PWC Project Engineer.
- C. Weigh/Quantity Tickets
 - 1. Weigh/quantity tickets shall be required for those quantities that are not measured in place, including but not limited to, select material and undercut excavation. Work of this nature requires approval from the PWC Project Engineer or Project Coordinator prior to beginning. PWC reserves the right to reject payment requests for Work not properly authorized.
 - 2. All quantity tickets for items not measurable in place shall be submitted to the PWC 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 PWC Project Coordinator by the end of the next working day. No tickets shall be accepted after that time unless otherwise authorized by Project Engineer.
 - 3. When a material is to be paid for on a per ton basis (i.e, material for undercut excavation), the weighing devices 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 Statues. A certified weigh certificate shall be issued for each load and contain the following information: date and time of issuance, name of project and job location, type of material, gross weight, tare weight, net weight of material, quarry or plant location, truck number, Contractor (or approved subcontractor), public weigh master's stamp, and public weigh master's signature or initials.
 - 4. The PWC Project Engineer and/or the PWC 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 the PWC.

11.05 Person Authorized to Sign Documents

- A. The Contractor shall provide a list of all persons who are authorized to sign documents such as Change Orders, Pay applications, Proposals, and Certificates on their behalf. Upon the Contractor signing any document it will be fully binding to the Contractor and hold them to the conditions and provisions of such documents.

11.06 Payments to Contractor

- A. Draft Pay Applications
 - 1. The Contractor is encouraged to submit draft pay applications to the PWC Project Engineer prior to submittal of the official pay application. The draft pay applications shall be submitted via email for ease of review and comment by the PWC Project Engineer.
 - 2. The PWC Project Engineer will review and provide any comments on the draft pay application within five (5) business days.
- B. Official Applications for Payment

1. The Contractor shall furnish two (2) paper copies (one original and one copy) of the official pay application. The official pay application shall have a cover sheet similar to AIA Form G702 (or other mutually agreeable template) that summarizes the contract value, any change orders, and Work completed to date.
 2. The Contractor shall attach the following items with the application for payment:
 - a. Sales tax certificate: A sales tax certificate shall be submitted even if the Contractor is not claiming sales tax for the billing period. The Contractor shall include copies of all invoices claimed on the sales tax certification.
 - b. Small Disadvantaged Business Enterprise Program (SDBE) Affidavit E: The Affidavit E form shall be submitted even if the Contractor is not paying SDBE subcontractors for the billing period.
- C. All other provisions regarding payments to the Contractor shall be in accordance with Section 0700 - *General Conditions* and these Contract Documents.

01200 | MEASUREMENT AND PAYMENT

This section defines the methods of measurement and payment for each of the prices listed in the Proposal. The price bid shall be full compensation for the work required under each bid item, which shall include all incidental costs relative thereto.

Site Preparation

1.1 MOBILIZATION (3% MAX)

- A. Measurement: Lump sum basis, up to 3% of Total Bid Price for each schedule.
- B. The actual cost of bonds and insurance (up to the maximum payment of 3%) will be considered in the initial payment request provided that cost documentation suitable to the Project Engineer is furnished by the Contractor. Any outstanding balance of the mobilization and demobilization Pay Item will be payable when the Project is determined to be 10% complete as indicated by the approved progress payments (less cost of mobilization).

1.2 ALLOWANCE FOR THIRD PARTY VIBRATION MONITORING

- A. Measurement: Measurement shall not be made for this item. An allowance has been established for vibration monitoring (i.e., vibration monitoring above normal monitoring by Contractor) as required in these contract documents. This allowance shall only be utilized upon request by the Owner for these monitoring services. Prior to monitoring, Contractor shall submit the contract between the monitoring firm and Contractor to the Owner for approval. Where services are requested by the owner, Contractor shall submit invoices to show actual cost of services for use in fulfillment of allowance.
- B. Payment under this item shall be for actual invoices for third party services plus up to 5 percent of cost of the services as compensation for coordination of the work.

1.3 FURNISH AND INSTALL EPOXY LINED DUCTILE IRON GRAVITY SEWER PIPE (OPEN TRENCH)

- A. Measurement: by linear feet of gravity sewer main installed measured horizontally along the centerline of the top of the pipe, including all necessary fittings. Payment shall be made at the applicable unit price and depth as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to install the gravity sewer main as indicated on the plans and in accordance with PWC standards. Work shall include all costs for excavation, backfill, compaction, fittings, cutting and removal of pavement, coatings, installation of the pipe at the specified line and grade, bedding material, de-watering, removal and disposal of excess unsuitable material off site, and all labor, materials, equipment, and incidentals necessary to complete the work. The Contractor shall be responsible for completing the installation, all required compaction testing, proper alignment of the installed main, and all other items related to proper installation. No payment for installation of sewer main will be made until all required testing has been satisfactorily completed. No additional payment shall be made for excavation in excess of the allowable trench width as defined by PWC standards. The unit price shall not include sanitary sewer pipe installed for aerial crossings.
- C. Installation of the ceramic epoxy coated ductile iron sewer main shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*. The interior lining of the ductile iron sewer main shall be in accordance with PWC Standard Specifications *09804 Epoxy Coating*.

1.4 FURNISH AND INSTALL C900 PVC GRAVITY SEWER PIPE (OPEN TRENCH)

- A. Measurement: by linear feet of gravity sewer main installed measured horizontally along the centerline of the top of the pipe, including all necessary fittings. Payment shall be made at the applicable unit price and depth as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to install the gravity sewer main as indicated on the plans and in accordance with PWC standards. Work shall include all costs for excavation, backfill, compaction, fittings, cutting and removal of pavement, coatings, installation of the pipe at the specified line and grade, bedding material, de-watering, removal and disposal of excess unsuitable material off site, and all labor, materials, equipment, and incidentals necessary to complete the work. The Contractor shall be responsible for completing the installation, all required compaction testing, proper alignment of the installed main, and all other items related to proper installation. No payment for installation of sewer main will be made until all required testing has been satisfactorily completed. No additional payment shall be made for excavation in excess of the allowable trench width as defined by PWC standards. The unit price shall not include sanitary sewer pipe installed for aerial crossings

1.5 FURNISH AND INSTALL CL 53 RJ x FLG EPOXY LINED DUCTILE IRON GRAVITY SEWER PIPE (OPEN TRENCH)

- A. Measurement: by linear feet of gravity sewer main installed measured horizontally along the centerline of the top of the pipe, including all necessary fittings. Payment shall be made at the applicable unit price and depth as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to install the gravity sewer main as indicated on the plans and in accordance with PWC standards. Work shall include all costs for excavation, backfill, compaction, fittings, cutting and removal of pavement, coatings, installation of the pipe at the specified line and grade, bedding material, de-watering, removal and disposal of excess unsuitable material off site, and all labor, materials, equipment, and incidentals necessary to complete the work. The Contractor shall be responsible for completing the installation, all required compaction testing, proper alignment of the installed main, and all other items related to proper installation. No payment for installation of sewer main will be made until all required testing has been satisfactorily completed. No additional payment shall be made for excavation in excess of the allowable trench width as defined by PWC standards. The unit price shall not include sanitary sewer pipe installed for aerial crossings.
- C. Installation of the ceramic epoxy coated ductile iron sewer main shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*. The interior lining of the ductile iron sewer main shall be in accordance with PWC Standard Specifications *09804 Epoxy Coating*.

1.6 FURNISH AND INSTALL CL 53 RJ x FLG EPOXY LINED DUCTILE IRON GRAVITY SEWER PIPE (AERIAL)

- A. Measurement: by linear feet of gravity sewer main installed measured horizontally along the centerline of the top of the pipe, including all necessary fittings. Measurement for payment shall be made based upon the unburied length of the pipe. Payment shall be made at the applicable unit price and depth as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to install the gravity sewer main as indicated on the plans and in accordance with PWC standards. Work shall include all costs for excavation, backfill, compaction, fittings, cutting and removal of pavement, coatings, installation of the pipe at the specified line and grade, bedding material, de-watering, removal and disposal of excess unsuitable material off site, and all labor, materials, equipment, and incidentals necessary to

complete the work. The Contractor shall be responsible for completing the installation, all required compaction testing, proper alignment of the installed main, and all other items related to proper installation. No payment for installation of sewer main will be made until all required testing has been satisfactorily completed.

- C. Installation of the ceramic epoxy coated ductile iron sewer main shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*. The interior lining of the ductile iron sewer main shall be in accordance with PWC Standard Specifications *09804 Epoxy Coating*. The exterior coating of the aerial ductile iron pipe shall be in accordance with PWC Standard Specification 09960 Aerial Crossing High Performance Coatings.

1.7 FURNISH AND INSTALL AERIAL STEEL ENCASUREMENT PIPE WITH CL 53 RJ x FLG EPOXY LINED DIP SANITARY SEWER CARRIER PIPE

- A. Measurement: by linear feet of encasement pipe with carrier pipe installed measured horizontally along the centerline of the top of the pipe, including all necessary fittings. Measurement for payment shall be made based upon the unburied length of the pipe. Payment shall be made at the applicable unit price for wall thickness and carrier pipe as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to install the sewer main as indicated on the plans and in accordance with PWC standards. Work shall include all costs for clearing and grubbing, excavation (including exploratory excavation), bracing, shoring, sheeting, backfill, compaction, cutting and removal of pavement, armoring, and protection and adjustment of aboveground and underground utilities. Work shall also include furnishing and installation of fittings, coating, encasement pipe, spacers, end seals, aerial pipe guards/barriers, detection wire, bedding material, and carrier pipe at the specified line and grade. Work shall also include de-watering, testing, inspection, removal and disposal of excess material off site, and all labor, materials, equipment, and incidentals necessary to complete the work.
- C. Installation of the ceramic epoxy coated ductile iron sewer main shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*. The interior lining of the ductile iron sewer main shall be in accordance with PWC Standard Specifications *09804 Epoxy Coating*. The exterior coating of the steel encasement pipe shall be in accordance with PWC Standard Specification 09960 Aerial Crossing High Performance Coatings.

1.8 FURNISH AND INSTALL AERIAL STEEL ENCASUREMENT PIPE WITH RJ EPOXY LINED DIP SANITARY SEWER CARRIER PIPE

- A. NOT USED

1.9 FURNISH AND INSTALL DOUBLE H-PILES

- A. Measurement: by each double H-pile installed. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to install the double H-piles for the aerial crossing, including clearing and grubbing, concrete encasement, equipment, and time associated with inspection following installation.
- C. All work shall be completed in accordance with PWC Standard Specifications and details

1.10 FURNISH AND INSTALL SINGLE H-PILES

- A. Measurement: by each single pile installed. Payment shall be made at the applicable unit price as listed in the Bid Form.

- B. Payment under this item shall include all costs necessary to install the double H-piles for the aerial crossing, including clearing and grubbing, concrete encasement, equipment, and time associated with inspection following installation.
- C. All work shall be completed in accordance with PWC Standard Specifications and details

1.11 CONNECT TO EXISTING SANITARY SEWER

- A. Measurement: by each connection made. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to locate and excavate an existing sanitary sewer pipeline, cut the existing pipeline and install required fittings, couplings, and incidentals required for a new, water-tight connection between new and existing sanitary sewer pipelines as indicated on the plans and in accordance with PWC Standards. Work shall include all materials, testing, and all equipment, tools, labor, and incidentals necessary to complete the work. All work shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*.

1.12 FURNISH AND INSTALL GROUT PLUG

- A. Measurement: by each grout plug made. Payment shall be made at the applicable unit price and grout plug size as listed in the Bid Form.
- B. Payment under this item shall include all labor, equipment and materials including the cost of purchasing, transporting, and placing grout inside existing gravity sewer pipes.

1.13 REMOVE EXISTING SANITARY SEWER

- A. Measurement: by linear feet of aerial gravity sewer main removed. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to remove the aerial gravity sanitary sewer main as indicated on the plans and in accordance with PWC standards. Work shall include all costs for removal of the pipe, including, but not limited to, removal of pipe straps, demolition of pipe material, and disposal of demoed material. The unit price shall not include removal of any pipe supports.
- C. Payment under this item shall include all costs necessary to remove the buried gravity sanitary sewer main as indicated on the plans and in accordance with PWC standards. Work shall include all costs for removal of the pipe, including, but not limited to, removal of pipe straps, demolition of pipe material, and disposal of demoed material. The unit price shall not include removal of any pipe supports.

1.14 REMOVE DOUBLE H-PILE STEEL PIPE SUPPORT

- A. Measurement: by each pipe support removed. Payment shall be made at the applicable unit price and size as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to remove the steel pipe supports as indicated on the plans and in accordance with PWC standards. Work shall include all costs for excavation, backfill, compaction, coatings, de-watering, removal and disposal of excess unsuitable material off site, and all labor, materials, equipment, and incidentals necessary to complete the work. The unit price shall not include removal of any existing sanitary sewer pipe.

1.15 REMOVE CONCRETE PIPE SUPPORT

- A. Measurement: by each pipe support removed. Payment shall be made at the applicable unit price and size as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to remove the concrete pipe supports as indicated on the plans and in accordance with PWC standards. Work shall include all costs for excavation, backfill, compaction, coatings, de-watering, removal and disposal of excess unsuitable material off site, and all labor, materials, equipment, and incidentals necessary to complete the work. The unit price shall not include removal of any existing sanitary sewer pipe.

1.16 REMOVE EXISTING MANHOLE

- A. Measurement: by each manhole removed. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. Payment under this item shall include all costs necessary to remove the existing manhole as indicated on the plans and in accordance with PWC standards. Work shall include all costs for excavation, removal and offsite disposal of existing manholes and unsuitable material, backfill, and compaction required to restore the surrounding area to existing grade.

1.17 FURNISH AND INSTALL PRECAST CONCRETE DOGHOUSE MANHOLE, NON-TRAFFIC, CAM LOCK RING AND COVER

- A. Measurement: by each manhole installed. Payment shall be made at the applicable unit price for size, depth, and type as listed in the Bid Form. For payment purposes, the manhole depth is defined as the difference between the manhole rim elevation and lowest invert elevation.
- B. Payment under this item shall include all costs necessary to install the specified manholes as indicated on the plans and in accordance with PWC Standards. Work shall include cutting and removal of pavement, removal and disposal of excess unsuitable material off site, excavation, backfill, de-watering, compaction, stone base, sealants, grout, boots, installation of PWC-issued marker, ring and cover as specified on the Contract Drawings, anti-microbial admixture, testing, and all equipment, tools, labor, and incidentals necessary to complete the work.
- C. Installation of the precast concrete manholes shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*.

1.18 FURNISH AND INSTALL PRECAST CONCRETE MANHOLE, NON-TRAFFIC, CAM LOCK RING AND COVER

- A. Measurement: by each manhole installed. Payment shall be made at the applicable unit price for size, depth, and type as listed in the Bid Form. For payment purposes, the manhole depth is defined as the difference between the manhole rim elevation and lowest invert elevation.
- B. Payment under this item shall include all costs necessary to install the specified manholes as indicated on the plans and in accordance with PWC Standards. Work shall include cutting and removal of pavement, removal and disposal of excess unsuitable material off site, excavation, backfill, de-watering, compaction, stone base, sealants, grout, boots, installation of PWC-issued marker, ring and cover as specified on the Contract Drawings, anti-microbial admixture, testing, and all equipment, tools, labor, and incidentals necessary to complete the work.
- C. Installation of the precast concrete manholes shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*.

- 1.19 FURNISH AND INSTALL PRECAST CONCRETE MANHOLE, NON-TRAFFIC, CAM LOCK RING AND COVER TO REPLACE EXISTING MANHOLE
- A. Measurement: by each manhole installed. Payment shall be made at the applicable unit price for size, depth, and type as listed in the Bid Form. For payment purposes, the manhole depth is defined as the difference between the manhole rim elevation and lowest invert elevation.
 - B. Payment under this item shall include all costs necessary to install the specified manholes as indicated on the plans and in accordance with PWC Standards. Work shall include cutting and removal of pavement, removal and disposal of excess unsuitable material off site, excavation, backfill, de-watering, compaction, stone base, sealants, grout, boots, installation of PWC-issued marker, ring and cover as specified on the Contract Drawings, anti-microbial admixture, testing, and all equipment, tools, labor, and incidentals necessary to complete the work.
 - C. Installation of the precast concrete manholes shall be accomplished in accordance with PWC Standard Specifications 02730 Sanitary Sewer Systems
 - D. Where new manholes are installed to replace existing manholes, all costs associated with reconnection of existing sewer mains and sewer services is to be included in the cost of the manhole.
- 1.20 FURNISH AND INSTALL PRECAST CONCRETE MANHOLE, TRAFFIC, STANDARD RING AND COVER
- A. Measurement: by each manhole installed. Payment shall be made at the applicable unit price for size, depth, and type as listed in the Bid Form. For payment purposes, the manhole depth is defined as the difference between the manhole rim elevation and lowest invert elevation.
 - B. Payment under this item shall include all costs necessary to install the specified manholes as indicated on the plans and in accordance with PWC Standards. Work shall include cutting and removal of pavement, removal and disposal of excess unsuitable material off site, excavation, backfill, de-watering, compaction, stone base, sealants, grout, boots, installation of PWC-issued marker, ring and cover as specified on the Contract Drawings, anti-microbial admixture, testing, and all equipment, tools, labor, and incidentals necessary to complete the work.
 - C. Installation of the precast concrete manholes shall be accomplished in accordance with PWC Standard Specifications *02730 Sanitary Sewer Systems*.
- 1.21 FURNISH AND INSTALL PRECAST CONCRETE ANCHOR BLOCK
- A. Measurement: by each anchor block installed. Payment shall be made at the applicable unit price as listed in the Bid Form
 - B. Payment under this item shall include all costs necessary to install the anchor block for the sanitary sewer main, including all costs for excavation, backfill, compaction, bedding material, de-watering, removal and disposal of excess unsuitable material off site, and all labor, materials, equipment, and incidentals necessary to complete the anchor block installation including reinforced concrete, pipe strap, anchor bolts and all incidentals.
 - C. All work shall be completed in accordance with PWC Standard Specifications and Details.

1.22 EROSION AND SEDIMENTATION CONTROL MEASURES

- A. Measurement: a single lump sum price. Payment shall be made in equal monthly payments, starting in the first month where erosion control measures are completely installed at the project site and ending upon completion of the project.
- B. Work shall include all costs for design, labor, materials, equipment, mobilization, demobilization, installation, monitoring, maintenance, removal, cleanup and all associated work required for the erosion and sedimentation control measures as defined in the Contract Documents, in addition to those which may be required by applicable laws, regulations, ordinances and permits. Any fines associated with failure to comply with applicable laws, regulations, ordinances and permits resulting from the Contractor's performance of erosion and sedimentation control shall be paid for by the Contractor
- C. Payment under this item shall include all costs necessary for clearing, grubbing, excavation, grading, and all erosion control items that may be required for installation of erosion and sedimentation control measures. The item also includes drainage pipes, relocation and support of existing utilities, maintenance during construction, and final removal and cleanup, in addition to cutting, removal and replacement of all landscape and hardscape areas as required to install and remove the erosion and sedimentation control measures within the limits specified on the drawings. All areas disturbed as a result of installation, maintenance and removal of the erosion and sedimentation control measures are to be restored to match existing conditions. No separate payment will be made for restoration to existing hardscape resulting from the contractor's access to the work areas. Payment under this item shall include all costs including materials, equipment, tools, labor, and incidentals necessary to complete the work.
- D. All work shall be completed in accordance with PWC Standard Specifications and details

1.23 FURNISH AND INSTALL TEMPORARY BYPASS PUMPING

- A. Measurement: a single lump sum price. Payment shall be made in equal monthly payments, starting in the first month where sewer bypass pumping equipment is mobilized to the project site, setup and verified as ready for use, and ending upon completion of the project.
- B. Work shall include all costs for design, labor, materials, equipment, mobilization, demobilization, set up, testing, monitoring, fuel, oil, maintenance, diversion blocking/isolation, scour protection, permitting, cleanup, pumping systems, plugs, valves and piping required for diverting wastewater flow around the proposed work as defined in the Contract Documents. Any fines associated with sewer overflows, spills, or backups resulting from the wastewater diversion shall be paid for by the Contractor.

1.24 INSTALL NEW CHAIN LINK SWING GATES

- A. Measurement: by each chain link swing gate installed. Payment shall be made at the applicable unit price per each chain link swing gate installed as listed in the Bid Form.
- B. Payment shall include the costs for all labor, tools, materials and equipment necessary for installation of a chain link gate.
- C. All work shall be completed in accordance with PWC Standard Specifications and Details.

1.25 PERMANENT SOD GRASS

- A. Measurement: by square yard of sod complete and in place. Payment shall be made at the applicable unit price as listed in the Bid Form.

- B. Work shall include all costs 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, re-sodding if required, tack, and all labor, materials, tools, equipment, and incidentals necessary to complete the work.
- C. All sod shall be installed in accordance with PWC Standard Specification *02931 – Sod*.

1.26 PERMANENT SEEDING

- A. Measurement by acre of permanent seeding complete and in place. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. Work shall include all costs to prepare the soil, providing topsoil as necessary, grading, raking, pest and disease control, soil amendments, fertilizing, maintaining, removal and replacement of dying vegetated areas, watering, reseeding if required, tack, and all labor, materials, tools, equipment, and incidentals necessary to complete the work. Once construction is completed, the Contractor shall be responsible for fine grading all exposed areas. All disturbed areas of the project are to be placed with permanent seeding, unless sod is required, to ensure against erosion, in accordance with the Soil Erosion and Sedimentation Control requirements.
- A. All seeding shall be installed in accordance with PWC Standard Specification *02933 – Seeding*

1.27 UNDERCUT EXCAVATION

- A. Measurement: This item shall be measured by cubic yards along the centerline of the trench times the undercut depth below the pipe bedding as shown in the Contract Documents. Measurement shall be based on the actual quantities removed but not exceeding the maximum specified trench dimensions. Payment shall not be made for quantities that have not been field verified.
- B. This work includes complete removal and disposal of unstable soil including, but not limited to, excavating, loading, hauling, properly disposing of excavated material, and providing stone for backfill, including wrapping of stone geotextile fabric. Providing stone material for backfilling shall include, but not be limited to, material, loading, hauling, placing and compacting.

1.28 CONTINGENCY ALLOWANCE

- A. This line item shall be used only upon issuance of a written work order by the Public Works Commission 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 the Public Works Commission as a credit. The Public Works Commission reserves the right to delete the allowance from the contract prior to award.

01300 | SUBMITTAL PROCEDURES

Article 1 – REVIEW AND APPROVAL OF SUBMITTALS

- 1.01 The Contractor shall not perform any portion of the Work that requires submittal review until the PWC Project Engineer has reviewed and approved the required submittals.
- 1.02 The Contractor shall furnish one (1) electronic set (in PDF format) of the required submittals.
- 1.03 The PWC Project Engineer shall, within 10 business days of receipt, review the submittals and mark them as approved, disapproved, revise and resubmit, or approved with comment. All notifications regarding the submittals will be provided to the Contractor in writing. For shop drawings, product data, and samples, PWC shall return one (1) paper set and one (1) electronic set of the marked submittals to the Contractor.
- 1.04 Disapproved submittals shall be revised and shall be resubmitted to the PWC Project Engineer. Revised submittals shall follow the same procedures as original submittals.
- 1.05 Approval of submittals shall not relieve the Contractor of the Contractor's sole responsibility for errors, omissions, or deviations in the submittals, nor of the Contractor's sole responsibility for compliance with these Contract Documents.
- 1.06 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.

Article 2 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- 2.01 Where manufacturer's publications, in the form of catalogs, illustrations, or other data sheets, are submitted in lieu of prepared Shop Drawings, the Contractor shall mark the submittal to indicate the particular item to be utilized for this Project. Such submittals shall have the same meaning as Shop Drawings in these Contract Documents.
- 2.02 Product data shall include materials of construction, dimensions, performance characteristics and capacities, etc. Submittals showing only general information will not be accepted.
- 2.03 When warranties are called for, a sample of the warranty shall be submitted with the Shop Drawings. The sample warranty shall be the same form that will be used for the actual warranty

Article 3 – SUBMITTALS SCHEDULE

- 3.01 Submittals required prior to starting any Work at each site:
 - A. Administrative submittals
 1. Insurance as required by encroachment agreements
 2. Contractor personnel emergency contact information
 3. Labor and equipment rates
 4. Contractor's safety plan, including confined space program
 5. Sample property owner agreement
 6. Copies of any executed property owner agreements
 7. Pre-construction videos and pictures

8. Proposed construction schedule (updated at each progress meeting)
 9. Traffic control plan
 10. If required, staging area plan and associated erosion and sedimentation control supplemental plan
- B. Incidental Work Submittals
1. Erosion and sedimentation control measures
 2. Fence materials (posts, mesh, hardware, etc.)
 3. Temporary bypass pumping and piping, work plan, etc. (in accordance with PWC Specification 02750)
- C. Standard Sewer System Submittals (in accordance with PWC Specification 02730)
1. Ductile iron and PVC pipe material and fittings
 2. Restrained joint ductile iron pipe and restrained joint fittings
 3. Sewer main laterals, wyes and fittings
 4. Internal pipe coatings
 5. Precast concrete manholes and manhole coatings and/or admixtures
 6. Manhole boots, jointing material, etc.
 7. Manhole frame, covers, and vents
- D. Aerial Pipe Crossing and Structural Elements
1. Piles
 2. Steel casing
 3. Coating for steel casing

01400 | QUALITY CONTROL

Article 1 – QUALITY ASSURANCE

- 1.01 Quality: All materials shall be new and correctly designed and shall conform to the requirements outlined in these Contract Documents. They shall be standard first-grade quality produced by expert workmen and be intended for the use for which they are offered. Materials which, in the opinion of the OWNER, are inferior or of a lower grade than indicated, specified, or required will not be acceptable.
- 1.02 Source Limitations: To the greatest extent possible for each unit of Work, the CONTRACTOR shall provide products, materials, or equipment from a single manufacturer.
- 1.03 Compatibility of Options: If the CONTRACTOR cannot obtain all necessary products, materials, and/or equipment from a single manufacturer, the CONTRACTOR shall submit compatible products, materials, and/or equipment to the OWNER for review and approval. Once the OWNER has issued approval of the proposed products, materials, and/or equipment, the CONTRACTOR shall only utilize that manufacturer's products, materials, and/or equipment, unless otherwise approved in writing by the OWNER.

Article 2 – QUALITY CONTROL

- 2.01 Quality control is the sole responsibility of the CONTRACTOR and shall include the activities of his Subcontractors and all suppliers as required.

Article 3 – TESTING SERVICES

- 3.01 The CONTRACTOR shall cooperate with the OWNER's Consultant performing required testing and provide equipment, access, or other means required at no additional expense to the OWNER. The CONTRACTOR shall be responsible for coordinating testing with the Project Coordinator. The CONTRACTOR shall be responsible for all costs incurred by the OWNER's Consultant when scheduled testing cannot be performed.
- 3.02 The OWNER shall employ and pay for the services of an independent laboratory for specified testing as outlined in these Contract Documents, with the following exceptions:
- A. If Laws and Regulations of any public body having jurisdiction specifically require any part of the Work to be tested, inspected, or approved by an employee or other representative of that public body, the CONTRACTOR shall be responsible for arranging and obtaining such inspections and/or approvals. The CONTRACTOR shall bear all costs associated with the required testing, inspections, and/or approvals, and shall furnish the OWNER all required documentation that the required testing, inspection, and/or approvals have been obtained.
 - B. If any part of the Work is found to be defective and not in compliance with the Contract Documents, the CONTRACTOR shall be responsible for all subsequent testing necessary to prove that the Work has been brought into compliance. Any necessary testing to ensure compliance shall be directed by the Project Coordinator and/or Project Engineer.
 - C. Arranging and obtaining any required inspections, testing, or approvals required in connection with the OWNER's acceptance of a material supplier, or equipment proposed to be incorporated into the Work, or materials, mix designs, etc. submitted for approval prior to purchase for incorporation into the Work. All inspections, tests, and approvals shall be performed by organizations acceptable to the OWNER.

Article 4 – PRODUCT EVALUATION

- 4.01 Testing shall be accomplished as deemed necessary by the OWNER to ensure that the products conform to the requirements of the Contract Documents.
- 4.02 The work or actions of the testing laboratory shall in no way relieve the CONTRACTOR of his obligations under the Contract. The laboratory testing work will include such inspections and testing required by the Contract Documents, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform, accept, or approve any of the CONTRACTOR's Work.
- 4.03 The CONTRACTOR shall allow the OWNER ample time and opportunity for evaluation and testing materials to be used in the Work. The CONTRACTOR shall advise the OWNER promptly upon placing orders for materials so that arrangements may be made, if desired, for evaluation before shipment from the place of manufacture. The CONTRACTOR shall furnish the OWNER and his representatives, facilities including labor, and allow proper time for evaluation and testing materials, and workmanship. The CONTRACTOR must anticipate that possible delays may occur due to the necessity of materials being inspected and accepted for use. The CONTRACTOR shall furnish, at his own expense, all samples of materials required by the OWNER for testing, and shall make his own arrangements for providing water, electric power, or fuel for the various evaluation and tests of structures and materials.
- 4.04 The OWNER will bear the cost of all tests, evaluation, or investigations undertaken by the order of the Project Engineer for the purpose of determining conformance with the Contract Documents if such tests, evaluation, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the OWNER as a result of such tests, evaluation, or investigations, the CONTRACTOR shall bear the full cost of any additional tests, evaluations and investigations, which are ordered by the OWNER to ascertain subsequent conformance with the Contract Documents.

Article 5 – EVALUATION AT PLACE OF MANUFACTURE

- 5.01 Unless otherwise specified, all products and materials shall be subject to evaluation by the OWNER at the place of manufacture.
- 5.02 The presence of the OWNER at the place of manufacture however, shall not relieve the CONTRACTOR of the responsibility for furnishing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the CONTRACTOR, and said duty shall not be avoided by any act or omission on the part of the OWNER.

Article 6 – SAMPLING AND TESTING

- 6.01 Unless otherwise specified, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered. However, the OWNER reserves the right to use any generally-accepted system of sampling and testing which will ensure that the quality of the workmanship is in full accord with the Contract Documents.
- 6.02 Any waiver by the OWNER of any specific testing or other quality assurance measures shall not be construed as a waiver of any requirements of the Contract Documents. The OWNER may require a guarantee of substantial performance and/or a performance bond to ensure any necessary corrective or remedial Work, should a waiver be granted.
- 6.03 The OWNER reserves the right to make independent investigations and tests. Failure of any portion of the Work to meet any of the requirements of the Contract Documents, shall be reasonable cause for the OWNER to require the removal or correction and reconstruction of any such work in accordance with the

Contract Documents. In addition to any other evaluation, observation or quality assurance provisions that may be specified, the OWNER shall have the right to independently select, test, and analyze, at their expense, additional test specimens or any or all of the materials to be used. Results of such tests and analyses shall be considered along with the tests or analyses made by the CONTRACTOR to determine compliance with the applicable specifications for the materials so tested or analyzed. The CONTRACTOR shall be responsible for all costs of removal, correction, and reconstruction or repair of any such Work that fails to meet the requirements of the Contract Documents.

Article 7 – SITE INVESTIGATION AND CONTROL

- 7.01 The CONTRACTOR shall verify all dimensions in the field and shall check field conditions continuously during construction. The CONTRACTOR shall be solely responsible for any inaccuracies built into the Work due to their failure to comply with this requirement.
- 7.02 The CONTRACTOR shall inspect related and appurtenant Work and shall report in writing to the OWNER any conditions which will prevent proper completion of the Work. Failure to report any such conditions shall constitute acceptance of all site conditions, and any required removal, repair, or replacement caused by unsuitable conditions shall be performed by the CONTRACTOR at their sole cost and expense.

Article 8 – RIGHT OF REJECTION

- 8.01 The OWNER shall have the right, at all times, to reject any articles or materials to be furnished hereunder which, in any respect, fail to meet the requirements of the Contract Documents, regardless of whether the defects in such articles or materials are detected at the point of manufacture or after completion of the Work. If the OWNER, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to the Contract Documents, such materials, no matter in what stage or condition of manufacture, delivery, or erection, may be subsequently rejected by the OWNER.
- 8.02 The CONTRACTOR shall promptly remove rejected articles or materials from the Work after notification of rejection. All costs of removal and replacement of rejected articles or materials as specified herein shall be borne by the CONTRACTOR.

Article 9 – WATERTIGHTNESS OF STRUCTURES

- 9.01 It is the intent of these Contract Documents that all Work shall be performed as required by quality construction to ensure proper sealing so that groundwater and/or rainwater will not leak into any repaired collection line, service lateral, or manhole.
- 9.02 The CONTRACTOR shall provide at its own expense all labor, material, temporary bulkheads, pumps, water, measuring devices, etc., necessary to perform the required tests.

Article 10 – HYDRAULIC UPLIFT ON STRUCTURES

- 10.01 The CONTRACTOR shall be completely responsible for any pipelines or manholes that may become buoyant before the Work is completed and accepted. The CONTRACTOR shall take all necessary steps to prevent any structures from becoming buoyant. Damage to any structures due to floating or flooding shall be repaired or replaced at the CONTRACTOR's expense.

Article 11 – TIME OF OBSERVATION AND TESTS

- 11.01 Samples and test specimens required under these Contract Documents shall be furnished and prepared for testing in ample time for the completion of the necessary tests and analyses before said articles or materials are to be used. The CONTRACTOR shall furnish and prepare all required test specimens within the scope of the Contract. Except as otherwise provided in the Contract Documents, the performance and cost of the required tests will be the responsibility of the OWNER. However, the costs of any test which shows unsatisfactory results shall be borne by the CONTRACTOR. Whenever the CONTRACTOR is ready to

backfill, bury, cast in concrete, or otherwise cover any Work under the Contract, the OWNER shall be notified not less than twenty-four hours in advance to request inspection before beginning any such Work of covering. Failure of the CONTRACTOR to notify the OWNER a minimum of twenty-four hours in advance of any such inspections shall be cause for the OWNER to order a delay in the CONTRACTOR's schedule to allow time for inspections. Any remedial or corrective Work required, and all costs of such delays, including its effect upon other portions of the Work, shall be borne by the CONTRACTOR.

02111 | SITE CLEARING (UTILITY)

SCOPE

Work described in this section includes clearing and grubbing, site, protecting adjoining property and trees as indicated on the drawings or as specified herein. The work shall include the complete removal and satisfactory disposal of all growth including trees, stumps, logs and roots; organic material, and other debris or items that interfere with construction operations. The site clearing operations shall be conducted in a manner to ensure minimum interference with roads and other adjacent occupied or used facilities.

PROTECTION OF TREES AND VEGETATION

Trees and vegetation to be left standing shall be protected from damage incidental to clearing, grubbing, and construction operations. The protection shall include un-necessary cutting, breaking or skinning of roots; skinning and bruising of bark; smothering of trees by stockpiling construction materials or excavated material within the drip line; excessive foot and vehicular traffic including parking of vehicles within drip line. Trees and vegetation receiving damage shall be repaired or replaced in a manner acceptable to the Engineer.

Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1 - 1/2" or more in diameter and shall be trimmed of live branches to such heights and such manner as directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branch. Cuts more than 1-1/2" in diameter shall be painted with an approved tree wound paint.

CLEARING AND GRUBBING

Clearing and grubbing shall be performed within the permanent right-of-ways. In the interest of conserving natural resources and protecting the environment, clearing shall be kept to a minimum within the temporary right-of-ways limits. Where permanent and temporary right-of-ways are offset, the additional temporary area may be used as a "buffer" zone to aid in sediment control where possible. Clearing shall consist of cutting trees, with a stump left not more than two inches (2") above natural ground. Saleable timber shall become the property of the Contractor. Reasonable care shall be taken during construction to avoid damage to vegetation not located in the right-of-ways. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees which receive damage to branches shall be trimmed to improve the appearance. Tree trunks receiving damage shall be treated with approved tree dressing.

Several areas along the main where a temporary easement is indicated on the plans and is located in people's yards, the Contractor shall limit clearing only as absolutely necessary for the sewer installation. Where possible, individual trees shall be worked around and preserved. These particular areas will be noted on the plans.

In the interest of erosion and sediment control, if possible, clearing and grubbing should be staged in 1/2 mile sections or less. In all cases, the time of disturbance between clearing and grubbing operations and actual sewer line construction should be kept to a minimum, particularly if ditches and temporary roads are utilized for access to the project.

02211 | GRADING, UTILITIES

GENERAL

This section covers grading for the roadways and drives including all excavations, formation of embankments, preparation of subgrade for pavements and finishing and dressing of graded earth areas, shoulders, and ditches.

MATERIALS

Topsoil, material obtained from excavation suitable for topsoil is defined as natural, friable soil, characteristics of representative soils in the vicinity that produce heavy growth of crops, grass, or other vegetation. Topsoil shall be free from roots, stones, and other materials that hinder grading, planting, and maintenance operations, and free from objectionable weed seeds.

Satisfactory 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 Fayetteville Public Works Commission. Satisfactory material shall be free from roots, organic matter, trash, debris, frozen material or stones larger than three (3) inches in any dimension.

Unsatisfactory 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 Fayetteville Public Works Commission.

Materials determined by the Fayetteville Public Works Commission as too wet or too soft to provide a stable subgrade, foundation, or fill will be classified as unsatisfactory regardless of soil classification. The Fayetteville Public Works Commission may require the Contractor to condition the wet and/or soft soils to provide a stable subgrade, foundation, or fill. The Contractor shall recondition the materials at no additional cost to the Fayetteville Public Works Commission.

CONSERVATION OF TOPSOIL

Areas designated for operations that contain a blanket of soil, which is more satisfactory for the growth of grass than the material to be placed, shall be stripped to a depth of approximately four (4) to six (6) inches and placed in convenient stockpiles as directed in the field, for later use as a topsoil blanket on the new graded areas specified herein, or as designated. The stripping of material for use as topsoil shall be carefully determined and only the quantity required shall be stripped and stockpiled. Material ordered stockpiled shall be placed in a satisfactory manner to afford drainage. When grading operations permit, instead of stockpiling, the topsoil shall be hauled and spread directly on the areas to receive topsoil.

Topsoil shall be placed on all shoulders, slopes, ditches, and other earth areas graded under this contract, excluding borrow areas, unless otherwise specified on the plans. Topsoil shall be uniformly placed on these areas to a compacted depth of not less than three (3) inches or more than four (4) inches. The material shall be free from clods of soil, matted roots greater than ½ inch in diameter, and any other objectionable material which might hinder subsequent grass and mowing operations. The material shall be placed, leveled, and lightly compacted with at least one pass of a cultipacker, or other approved equipment weighing 100 to 160 pounds per linear foot of roller, to required cross sections, but shall be left one-tenth of a foot below the finished earth grade as specified in the paragraph FINISHED EXCAVATION.

BORROW EXCAVATION (Select Backfill)

Where satisfactory materials are not available in sufficient quantities from the required excavation, approved materials shall be obtained from borrow areas. Borrow excavation material shall be supplied by the Contractor from borrow areas located off-site. The work covered by this section shall consist of the excavation of approved material from borrow sources and the hauling and utilization of such material as required on the plans or directed by the Fayetteville Public Works Commission. The borrow material shall be approved by the Fayetteville Public Works Commission and shall not contain roots, root mats, stumps, highly plastic clay or other unsatisfactory materials. The material shall be a soil material which meets requirements of AASHTO MI 45 for soil classification A-1-a, A-1-b, A-2-A, A-3 acceptable for select backfill. All borrow material shall be in accordance with the NCDOT Standard Specification for Roads and Structures, most recent edition. Borrow excavation shall be in accordance with the NCDOT Standard Specification for Roads and Structures, most recent edition Section 1018 and 230. Excess material removed within the work limits, suitable for borrow excavation, during "Unclassified Excavation" operations shall not be considered or paid for as borrow excavation.

UNDERCUT EXCAVATION

When the Fayetteville Public Works Commission determines that the natural soil materials in areas where fill is to be placed, or in the finished graded subgrade roadway cross section, or in areas supporting structures or pipes, are determined to have a poor supporting value, the Fayetteville Public Works Commission may require the Contractor to remove the materials and backfill with approved properly compacted material to the finish graded section. The Contractor shall conduct undercut operations in such a way that the Fayetteville Public Works Commission can take the necessary measurements before any backfill is placed. Any material removed and backfilled without the approval of the Fayetteville 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. All undercut excavation shall be in accordance with the NCDOT Standard Specification for Roads and Structures, most recent edition. Undercut excavations suitable for backfill on toes of slopes and other approved areas will not be paid for as borrow excavation.

FINISHED EXCAVATION

All areas covered by the project, including excavated and filled sections and adjacent transition areas, shall be uniformly graded. The finished surface shall be reasonably smooth, compacted, and free from irregular surface changes. The degree of finish shall be that ordinarily obtainable from blade-grader operations, except as otherwise specified. Ditches shall be finished to permit adequate drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing materials. Surfaces shall be finished not more than 0.15 foot above or below the established grade and approved cross section. In areas where the bulking of soil as a result of grassing operations will tend to retard surface drainage along the edge of pavements, the finished grades shall be left 0.1 foot below grade prior to grassing.

Newly graded areas shall be protected from traffic and/or from erosion, and any settlement or washing that may occur, prior to acceptance, shall be repaired and the required grades re-established. Embankments and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained in such a manner as to drain effectively at all times. The finished subgrade shall not be disturbed by traffic of other operations and shall be protected and maintained by the Contractor in a satisfactory condition until subbase, base, or pavement is placed. 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, and in no case shall base, surfacing, or pavement be placed on a muddy, spongy, or frozen subgrade. All work shall be conducted in accordance with the environmental protection requirements of the contract.

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 Fayetteville Public Works Commission.

RELATED SECTIONS

- A. 02730 – Sanitary Sewer Systems
- B. 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 Fayetteville 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 Fayetteville Public Works Commission. Unsuitable material as defined above shall be replaced with select material as determined by the Fayetteville Public Works Commission.

Suitable materials determined by the Fayetteville 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 Fayetteville Public Works Commission. The Contractor shall recondition and stockpile the materials at no additional cost to the Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville Public Works Commission. The Contractor shall conduct undercut operations in such a way that the Fayetteville Public Works Commission can take the necessary measurements before any backfill is placed. Any material removed and backfilled without the approval of the Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 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.

02272 | EROSION CONTROL

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. The Contractor 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 Fayetteville Public Works Commission or the North Carolina Department of Environment Quality (NCDEQ) 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. The Contractor 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 for correction of all damages. The Contractor is expected to review his site grading and drainage operations periodically 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 finish 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
- Wattles

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 and 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.
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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 ½ the design depth. Replace the contaminated gravel facing.
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 project locations if approved by the Fayetteville Public Works Commission.

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.

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02274 | GRAVEL CONSTRUCTION ENTRANCE/EXIT**GENERAL**

The work covered by this section consists of furnishing, installing, maintaining and removing temporary gravel construction entrance/exits. The entrance/exit shall be located at points where vehicles enter and exit the project and as indicated on the plans to limit sediment "tracked" off the site.

Where there are differences or conflict between this specification and those requirements outlined in an approved Erosion Control Plan, the specifications in the erosion control plan shall take precedence

MATERIALS

The stone shall be two inch (2") to three inch (3") washed stone.

INSTALLATION

The Contractor shall install the gravel construction entrance as shown on the plans and details. The construction entrance shall be constructed at the locations shown on the plans and at other locations directed by the Engineer.

The area to receive the stone shall be cleared of all vegetation, roots and other objectionable materials. The subgrade shall be graded and properly compacted. Areas yielding shall be covered with engineering fabric or undercut as directed by the Engineer. The stone shall be placed, graded and compacted to a minimum depth of eight inches (8") and as shown on the plans. The minimum construction entrance dimensions shall be 50 feet in length and 12 feet in width. The construction entrance/exit shall be maintained and the stone supplemented throughout the life of the project and shall be removed upon stabilization and disposed of off-site at the Contractor's expense.

02350 | STEEL “H” PILES**GENERAL**

The work covered by this section consists of furnishing and driving steel H piles as indicated on the plans and as directed by the Engineer, in conformity with these specifications and to the bearing and penetration required.

MATERIALS

Steel H piles shall be of the sizes and weights shown on the drawings and shall conform to the requirements of ASTM A 36. The Contractor shall submit a manufacturer's certification to the Engineer that the H piles are in accordance with the project specifications.

INSTALLATION

Steel piles shall be handled and stored by methods that will not injure the pile. The piles shall be stored above the ground on platforms, blocks, or other supports. The piles shall be kept free from dirt, grease, and other foreign matter and shall be protected in so far as practical from corrosion.

The Contractor shall furnish sufficient lengths to develop load requirements as stated on the plans. Full butt-welded splices shall be used. H piles shall be driven to a minimum penetration of 10 feet by an approved hammer developing not less than 7500 ft.-lbs. of energy per blow. The load capacity of each pile shall be determined by the following formula:

$$R_a = \frac{2 E}{S + 0.3}$$

where:

R _a	=	Safe load (lbs.)
E	=	Energy per blow (ft.-lbs.)
S	=	Final penetration per blow (inches) (average of last 6 blows)

Deviation of the location of the top of the pile from that shown on the plans shall not exceed 2 inches. A suitable driving cap shall be provided to prevent undue damage to the top of the pile. Piles shall be cut off at the required elevations along a plane normal to the axis of the pile. Methods used in cutting off piles shall meet the approval of the Engineer.

SHOP PAINTING

All steel piling shall be sandblasted in the shop to a minimum of SSPC-SP6-63. All sandblasted surfaces shall receive one (1) coat of Epoxy Primer the same day that piles are blasted. The primer shall be applied at the rate of 385 sq. ft. per gallon, which will provide 1.5 mils dry film thickness. Application method of the primer can be made by brush, roller brush, and conventional or airless spray.

FIELD PAINTING

After the piles have been driven, exposed primed surfaces shall be cleaned of dust and other foreign materials prior to applying two (2) coats of Coal Tar Epoxy at the rate of 90-115 square feet per gallon, which will provide a dry thickness of 8-10 mils coat. The minimum dry film thickness for the two coats shall be 16 mils. Application may be by brush, roller, conventional air spray or airless spray.

The re-coat time for the Coal Tar Epoxy can be as little as three (3) hours, but must not exceed 24 hours. Drying time of the coating is greatly affected by the temperature and humidity. If the first coat has exceeded the allotted time, it will be necessary to treat the coating prior to application of the second coat. The Coal Tar Epoxy shall not be applied in the rain or when the temperature is lower than 50 degrees F. Damaged surface areas due to handling and field welding must be wire brushed to original surface preparation and then coated with two (2) coats of Coal Tar Epoxy with minimum dry film thickness of 16 mils as specified above.

02500 | TRAFFIC CONTROL

GENERAL

The purpose of these specifications is to outline the Contractor's requirements for furnishing, erecting, maintaining, relocating, and removing traffic control devices for the maintenance of traffic during the Contractor's construction operations. The Contractor shall furnish all labor, materials, accessories, equipment and tools for performing all required traffic control operations.

REFERENCES

All work shall be in accordance with:

- A. The North Carolina Department of Transportation Standards and Specifications for Roads and Structures (most recent edition)
- B. The North Carolina Department of Transportation Roadway Standard Drawings (most recent edition)
- C. The Manual on Uniform Traffic Control Devices (MUTCD) – most recent edition
- D. The North Carolina Supplement to the MUTCD
- E. Section 01000 – Special Conditions, of these Contract Documents

REQUIREMENTS

TRAFFIC CONTROL PLAN

The Contractor shall submit a traffic control and phasing plan for the overall project to be reviewed and approved by the PWC Project Engineer, prior to starting construction. The Contractor shall obtain an approved copy of the traffic control plan for the overall project area prior to any excavation within roadways. The plan must indicate how traffic will be managed, signage to be used, and potential traffic patterns resulting from plan implementation. The plan shall be submitted to the PWC Project Engineer in accordance with Section 01000 "Special Conditions" and Section 01300 "Submittals" of these Contract Documents. Failure of the Contractor to submit the required traffic control plan sufficiently in advance shall not entitle the Contractor to any extension of Contract Time.

TRAFFIC CONTROL DEVICES

The Contractor working in public rights-of-way on streets open to vehicular traffic, shall be required to provide, erect, and maintain all necessary traffic control devices throughout the project area to include any connecting streets affected by construction activities. The Contractor shall provide a sufficient number of personnel, and take all precautions for the protection of the work and safety of the public. All traffic control devices in place shall be in accordance with the approved traffic control plan. All traffic control devices and device installation shall be placed and maintained in strict accordance with the resources listed above.

The Contractor shall be liable for any damages resulting from using unapproved and/or inadequate work zone traffic control. The Fayetteville Public Works Commission reserves the right to stop any work for non-compliance. The Contractor shall have no claim for delay due to stoppage of work as a result of non-compliance.

TRAFFIC CONTROL PLAN AND ROAD CLOSURE NOTIFICATION

1. **TRAFFIC CONTROL PLAN** – The Contractor shall notify the PWC Project Engineer, in writing, by 5:00 p.m. Wednesday, indicating which roadways will be affected by the work the following week. The Contractor shall notify NCDOT of work to be done per the terms of the approved encroachment agreement. The PWC Project Engineer shall receive copies of all correspondence via fax or email (PWC fax 910-829-0203; email addresses will be provided at the pre-construction meeting).

Traffic cannot be altered without notification as outlined in the above paragraph. Failure to do so will result in the Contractor not being able to work within the street the next week.

No work on the individual streets shall start until all the traffic control devices required for the particular work activity have been installed in accordance with the approved traffic control plan.

2. **ROAD CLOSURE NOTIFICATION** - When deemed to be in the best interest of the public, the Fayetteville Public Works Commission and the Contractor, a street may be closed for a duration mutually agreed upon. The Contractor shall submit a request in writing to the PWC Project Engineer for approval to have a street closed. The PWC Project Engineer will forward the request to the appropriate agency (i.e., City, NCDOT) for approval of the closure. The PWC Project Engineer will include their recommendation regarding approval or disapproval of the request. The PWC Project Engineer will respond in writing with any recommendation for approval or disapproval of the request.

The request shall be submitted a minimum of five (5) business days prior to the desired closure date. The request shall include the street name and the limits of the closure based on the points of intersection. The request shall also state the proposed duration the street is to be closed and shall include a traffic control plan showing the detour route, traffic control devices, etc. The traffic control plan submitted shall be in accordance with the requirements listed in this Specification.

Once the street closure has been approved, in writing, by the PWC Project Engineer, the Contractor accepts full responsibility for the closure, to include the installation, maintenance, and removal of all traffic control devices and all implied liability.

TRAFFIC CONTROL LOOPS

The City of Fayetteville and NCDOT maintain traffic detection loops at various intersections throughout the project limits. Due to the location of the proposed utility improvements, it may be necessary for these detection loops to be damaged. The Contractor shall contact the City of Fayetteville Traffic Services at (910) 433-1660, a minimum of three (3) days prior to excavating, in order for the City to locate these loops, or make any necessary revisions to the traffic signal facilities.

The City of Fayetteville will hire a third-party contractor to repair the damaged traffic detection loops. The invoice for this work shall be submitted to the Contractor for payment. The cost for this shall be incidental to the Contract.

STEEL PLATING ROADWAYS

Steel plating shall not be used without the prior written approval of the Project Engineer. The Contractor shall submit their proposed plan to utilize steel plates a minimum of five (5) working days prior to the proposed activity. Plating shall only be considered if the trench depths are 14 feet or greater. Should plating be approved the Contractor shall adhere to the following:

- 1) The trench shall be adequately shored to support bridging and traffic loads.
- 2) The trench box shall be sealed so there are no open voids.
- 3) Steel plates shall rest on trench box.
- 4) Steel plates shall extend beyond the outer edges of the trench box on all four sides.
- 5) There must be a minimum of two (2) feet of compacted backfill above steel plates.
- 6) Compacted backfill shall match existing street grade.
- 7) Provide documentation that the plates are capable of supporting potential loads.

Steel plating shall not exceed two (2) consecutive calendar days in any given week. However, provided that work is progressing in that particular section of sewer the Contractor may be allowed to utilize plating for a longer duration as approved in writing by the Project Engineer.

STEEL PLATING ROADWAYS (NCDOT STREETS)

Steel plating shall not be used without the prior written approval of the Fayetteville Public Works Commission Project Engineer. The Contractor shall submit their proposed plan to utilize steel plates a minimum of five (5) business days prior to the proposed activity. Should plating be approved, the Contractor shall adhere to the following:

- 1) The plates shall be secured against any movement from traffic. Options include “countersinking” the plates to be flush with the existing pavement, or bolting the plates to the pavement.
- 2) The plates shall overlap the excavation a minimum of two (2) feet on all sides.
- 3) The plates shall be sufficient to withstand the expected traffic loads.
- 4) Provide documentation that the plates are capable of supporting potential loads.

Steel plating shall not exceed two (2) consecutive calendar days in any given week. However, provided that work is progressing in that particular section of the project, the Contractor may be allowed to utilize plating for a longer duration as approved in writing by the Fayetteville Public Works Commission Project Engineer.

MATERIALS

- A. The Contractor shall utilize interim pavement marking paint as specified in the North Carolina Department of Transportation Standards and Specifications for Roads and Structures (most recent edition)
- B. Traffic cones may be utilized when approved by the Fayetteville Public Works Commission Project Engineer. If approved, traffic cones shall either be double stacked or weighted to prevent movement by traffic.
- C. All traffic control devices furnished by the Contractor shall remain the property of the Contractor, unless otherwise specified in these Contract Documents.

INSTALLATION

The furnishing, erecting, maintaining, relocating, and removal of traffic control devices shall be in accordance with the MUTCD (most recent edition), the requirements outlined in the approved traffic control plan, and these Contract Documents.

All traffic control devices shall be in place prior to the Contractor beginning work, removed during intervals when work is not on-going, and removed at the end of each business day (unless otherwise approved, as outlined in this specification).

The Contractor shall not obstruct or impede any traffic on adjacent streets, during the installation or removal of the traffic control devices, or during construction.

The Contractor shall not close a lane to through traffic after normal working hours and during periods of construction inactivity, unless otherwise approved in writing by the Fayetteville Public Works Commission Project Engineer.

The Fayetteville Public Works Commission Project Engineer may restrict the Contractor from placing lane closures during certain hours, holidays, or as deemed necessary for the convenience of the public. All lane closure types, hours of installation, and durations shall be as approved in writing by the Fayetteville Public Works Commission Project Engineer.

The use of police and/or trained flaggers to control traffic through the work site shall be provided by the Contractor as required. The Contractor shall be responsible for obtaining trained personnel to direct traffic and contacting local authorities for use of police for traffic control where applicable.

INTERIM PAVEMENT MARKINGS

The Contractor shall be required to place interim pavement markings (centerlines, lane lines, edgelines, railroad, and school symbols) daily on any street with existing pavement markings that have been obliterated.

THERMOPLASTIC PAVEMENT MARKINGS

The Contractor shall be required to place thermoplastic pavement marking centerlines, lane lines, and edge lines within three (3) calendar days after the completion of the resurfacing operation.

The Contractor shall be required to place all thermoplastic pavement marking symbols (arrows, crosswalks, stop lines, school symbols, railroad symbols, raised pavement markers, etc.) within seven (7) calendar days of the completion of the project.

NCDOT STREETS

All traffic control measures for work within NCDOT road rights-of-way shall be in accordance with the approved NCDOT encroachment agreement, and as specified herein. Where there is a conflict between the requirements of this specification and the approved encroachment, the requirements of the approved encroachment shall govern.

02573 | PERMANENT PAVEMENT PATCH

GENERAL

Permanent pavement patching shall be completed as indicated on the Contract Plans and in accordance with these Contract Documents. 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 replacement and correction of such defect as directed by the Public Works Commission. All materials and workmanship shall be in complete accordance with the standards and specifications of the Public Works Commission and subject to Public Works Commission inspection and approval. The materials and installation shall conform to the North Carolina Department of Transportation (NCDOT) Standards, (latest revision), the NCDOT HMA/QMS Manual (latest revision), and as specified herein.

REMOVAL

The Contractor shall cut the existing pavement to straight uniform widths parallel and perpendicular to the roadway. Jagged saw cuts will not be acceptable. The pavement shall be removed its entire depth. The Contractor shall properly dispose of all removed pavement. If the Contractor elects to mill the asphalt, the millings cannot exceed two (2) inches in size, and shall be swept into the trench and re-compacted. The removal limits shall extend a minimum of six (6) inches into solid undisturbed base course prior to patching or as directed by the Public Works Commission. Pavement removal shall not exceed 3,000 feet total for the entire project at one time. It shall be the Contractor's responsibility to maintain the trench (swept, wetted, compacted, etc.) until paved.

PAVEMENT

Replacing the pavement shall consist of the following:

Tack Coat

All existing pavement edges shall be tacked in accordance with the North Carolina Department of Transportation Standard Specifications for Roads and Structures (latest revision).

Asphalt Surface Course

The asphalt surface course shall be Type S9.5, placed in accordance with the PWC Standard Detail M.2. All asphalt surface course shall be in accordance with the NCDOT HMA/QMS Manual (latest revision) and the North Carolina Department of Transportation Standard Specifications for Roads and Structures (latest revision).

The pavement repair shall be constructed to the line, grade, crown and cross section of the existing street. The asphalt plant mix shall be compacted to density in accordance with the HMA/QMS Manual (latest revision). The Contractor shall provide a smooth transition from the existing pavement to the top of the backfill, so as to have no vertical drop (in any direction). The transitions shall only be removed the day of patch paving.

The permanent pavement patch shall be made within 30 days of installation of the line. If settlement should occur within one (1) year warranty period, the Contractor shall be required to remove asphalt, re-compact base and sub-base, and re-patch any areas of settlement at no expense to PWC. All repairs shall be in accordance with these Contract Documents.

Base Course

The base course shall be aggregate base course (ABC) installed to a minimum eight (8) inches thickness (compacted) and extending a minimum of six (6) inches beyond the edge of the trench as indicated on the PWC Standard Detail M.2. The base course shall be compacted to 100% maximum dry density at optimum moisture content as determined by the AASHTO T-99 as modified by NCDOT.

The Contractor, with permission of the Public Works Commission, may use asphalt concrete intermediate course, placed in a minimum four (4) inch layer extending a minimum of six (6) inches beyond the edge of the trench as

indicated on the Permanent Patch Detail. The Asphalt Concrete Intermediate Course shall be in accordance with the North Carolina Department of Transportation Standard Specifications (latest revision), and the NCDOT HMA/QMS Manual (latest revision).

Prior to patch paving, the Contractor shall remove the upper ten (10) inches of backfill, if ABC is to be used or upper six (6) inches if Asphalt Concrete Intermediate Course is to be used, in the trench. All asphalt edges along the trench shall be cut straight, uniform width, parallel and perpendicular to the road with no jagged edges. The outer six (6) inches (minimum) of the trench adjacent to the newly removed asphalt shall be on undisturbed soil.

The pavement repair shall be constructed to the line, grade, crown and cross section of the existing street. The asphalt plant mix shall be compacted to density in accordance with the HMA/QMS Manual.

Maintenance shall be performed at least weekly, after a rainfall, or at the direction of the Public Works Commission. Maintenance shall include sweeping the adjoining pavement, blading, wetting and compacting the stone to insure smooth drivable surface.

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 Fayetteville Public Works Commission.

RELATED SECTIONS

- A. 02211 – Grading, Utilities
- B. 02222 – Excavation and Backfilling for Utility Systems

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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville Public Works Commission detail, unless otherwise specifically approved by the Fayetteville 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 (Harco), 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 (SRD26) 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 Fayetteville Public Works Commission.

Manhole steps shall be placed in all manholes and shall be steel reinforced (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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville Public Works Commission. The manhole size shall be in accordance with the following table, unless otherwise specified:

Pipe Size	Manhole Diameter **
24" and less	48" *
27" – 36"	60"
42"	72"

* Where interior drop structures are required, use 60" diameter as required in the Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville Public Works Commission. In unpaved areas cam-lock ring and cover shall be used. Camlock ring and cover shall be installed in accordance with Fayetteville 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 Fayetteville 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 Fayetteville Public Works Commission standard details and requirements. The Contractor shall coordinate and cooperate with the Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville Public Works Commission's Project Coordinator, a minimum of 48 hours in advance. The Contractor shall cooperate with the Fayetteville 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 Fayetteville Public Works Commission's Project Coordinator. The Contractor shall provide the Fayetteville 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 Fayetteville 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:

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

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 Fayetteville 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 Fayetteville 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 Fayetteville 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)	Min Required Length (ft)	Minimum Time at Min Length (minutes)	Min Time at Longer Lengths (sec)
4"	597	3:46	0.380 x L
6"	398	5:40	0.854 x L
8"	298	7:34	1.520 x L
10"	239	9:26	2.374 x L
12"	199	11:20	3.418 x L
15"	159	14:10	5.342 x L
18"	133	17:00	7.692 x L
21"	114	19:50	10.470 x L
24"	99	22:40	13.674 x L
27"	88	25:30	17.306 x L
30"	80	28:20	21.366 x L
33"	72	31:10	25.852 x L
36"	66	34:00	30.768 x L

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 Fayetteville 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 Fayetteville 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 Fayetteville Public Works Commission in certain situations. The test shall be repeated until satisfactory to the Fayetteville 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 Fayetteville Public Works Commission prior to backfill. The use of couplings, sleeves, etc. shall be reviewed and approved by the Fayetteville Public Works Commission prior to use.

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02750 | WASTEWATER FLOW CONTROL

[Revised Sept 2019]

GENERAL

The intent and purpose of these specifications is to provide wastewater flow control, i.e., bypass pumping, of the sanitary sewer flows during the Contractor's operations. The Contractor shall furnish 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.

The Contractor shall provide all pumps, piping, and other equipment to accomplish this task; perform all construction; obtain all permits; pay all costs; and perform complete restoration of all existing facilities to equal or better condition to the satisfaction of the Fayetteville Public Works Commission. The Contractor shall be responsible for the design, installation, operation, and maintenance of the temporary bypass pumping system. The Contractor shall provide sufficient documentation to the Fayetteville Public Works Commission to demonstrate that he, or his designated subcontractor, have the experience in the design, installation, and maintenance of temporary bypass pumping systems.

RELATED SECTIONS

- A. Section 02500 – Traffic Control
- B. Section 02730 – Sanitary Sewer System

REQUIREMENTS

The Contractor shall be responsible for all aspects of the bypass operation, including but not limited to: providing access to install, move, and maintain the pumps in the proper position, traffic control, installation and removal of bypass equipment, pump monitoring, testing of the bypass system, re-fueling, maintenance, notification of property owners (should access to private property be necessary), wastewater and fuel spill containment, and removal and replacement of manhole cones (if necessary). The bypass system (pumps and piping) shall be monitored by Contractor personnel at all times, when the bypass operation is in effect.

The Contractor shall have all materials and equipment on site to immediately respond to any emergencies or other event that could impact the bypass system (i.e., leak in the discharge piping, pump failure, flooding, etc.). The Contractor shall have sufficient support staff and equipment to mobilize to repair and/or service any equipment within one (1) hour of notification, 24 hours a day, seven (7) days a week. In the event of an emergency, the Contractor shall provide an immediate response and fully cooperate with the Fayetteville Public Works Commission.

The Contractor shall install the bypass pumps, equipment, and discharge lines to minimize impacts to the property owners, residents, and environment. The Contractor shall be responsible for determining the best location for the bypass equipment, to include, but not limited to, the need for any special provisions to ensure access for the customers, preventing the pumps and manholes from flooding, etc. Such special provisions include, but are not limited to: installation of ramps, excavation and burial of the bypass lines, temporary fencing, sandbagging, construction of berms, raising the pumps, etc. The Contractor bears all responsibility for the maintenance and restoration of any trenches, ramps, access, etc. necessary for the temporary bypass pumping operation.

The Contractor shall take appropriate steps to ensure that all pumps, piping and hoses that carry raw sewage are protected from traffic. The Contractor shall identify the proposed methods to protect the temporary bypass pumping system from traffic as part of the detailed temporary bypass pumping plan. Traffic control shall be performed in accordance with these Contract Documents.

The bypass pumping system shall be monitored by Contractor personnel at all times (24 hours a day, 7 days a week), when the bypass operation is in effect. The Contractor's personnel shall be on-site at all times (24 hours a day, 7 days a week), and stationed at the primary bypass pumps. Depending on the location and system set-up, it may be necessary for the Contractor to station personnel at each of the various bypass pump locations. Unless otherwise approved by the Fayetteville Public Works Commission, one (1) person cannot monitor multiple bypass pump locations. All bypass

pumps, regardless of their location (primary or on secondary lines), shall be equipped with an automatic dialer (or other similar device). The Contractor personnel shall immediately respond to any issue regarding the temporary bypass pumping system. All temporary bypass piping shall be periodically monitored (patrolled from pumps to discharge), but no less frequently than once every 12 hours. The bypass pumping equipment shall be automated and capable of functioning without the assistance of an operator.

SUBMITTALS

All submittals shall be provided in accordance with these Contract Documents, and the requirements outlined herein. The Contractor shall submit a detailed bypass pumping plan to the Fayetteville Public Works Commission for approval, prior to initiating the bypass operation. The Contractor shall submit this information far enough in advance to allow sufficient time to complete the necessary coordination, including but not limited to obtaining permits (i.e., encroachments), getting permission from property owners to cross and/or utilize their property, and gaining any necessary regulatory approvals. Failure to submit a complete and comprehensive bypass pumping plan in a timely manner shall not be cause for any extension of the Contract Time.

The detailed temporary bypass pumping plan shall include the following information:

- Method of monitoring the pumps to ensure proper operation, to include method of notifying personnel (Fayetteville Public Works Commission and Contractor) in the event of an emergency, activation of back-up pumps, etc.
- Method of monitoring upstream system levels to ensure surcharging does not result in back-ups into buildings, overflows, etc.
- The amount, if any, of any required surcharging.
- Method to initiate back-up pumps.
- Map showing general location of the pumps and bypass lines. This shall include means to maintain access to driveways, etc.
- Measures to secure the bypass system (lines, pumps, etc.) from traffic, vandalism, high stream flows, etc.
- Method of plugging (and securing the plug(s)) and type of plugs.
- Size and location of manholes or other access points for suction and discharge piping.
- Size of pipeline(s) or conveyance system(s) to be bypassed.
- Number, size, material, location, and method of installation of suction piping.
- Number, size, material, location, and method of installation of discharge piping.
- Bypass pump sizes, capacities, and number of each size to be provided on-site, including all primary, secondary, and spare pumping units.
- Calculations of static lift, friction losses, minimum inlet submergence, and flow velocity (pump curves showing pump operating range shall be submitted). Calculations shall be signed and sealed by a licensed Professional Engineer registered in the State of North Carolina. Calculations shall be provided for both the peak flow rate and a normal daily rate (see PUMPING AND BYPASSING section for sizing requirements).
- Measures to protect discharge manhole(s) or structure(s) from erosion and damage due to the bypass operation.
- Erosion control measures.
- Emergency contact information for the personnel responsible for the pump operation.
- Emergency contact information for Contractor personnel to respond in the event of an emergency.
- List of available resources (equipment, materials, personnel) and contact information for emergency response.
- Method to contain potential releases of sewer flow from air release valves.
- Contingency plan for responding to potential sewer spills caused by weather, vandalism, acts of God, etc. The plan shall include communication protocols, available resources, and the steps to be taken in the event of an emergency.

No bypass operations shall proceed until all bypass submittals have been reviewed and approved by the Fayetteville Public Works Commission.

COORDINATION

The Contractor shall fully coordinate their temporary bypass pumping operations with the Fayetteville Public Works Commission. It is the Contractor's responsibility to fully determine the scope and location of the temporary bypass pumping system. As outlined in these Contract Documents, the Fayetteville Public Works Commission may provide assistance with the building and maintenance of access roads, clearing of easements, etc. All coordination (to include location of the pumps and discharge lines) shall be fully discussed and agreed to prior to commencement of bypass operations.

The Contractor shall schedule a coordination meeting with the Fayetteville Public Works Commission and other personnel (Contractor, bypass sub-contractor, etc.) a minimum of three (3) business days prior to starting the temporary bypass pumping system. The purpose of this coordination meeting is to ensure that the Contractor and their sub-contractors have a good understanding of the requirements and expectations of operating the temporary bypass pumping system, discuss contingency plans (to include protocols for emergency contacts), identify location(s) of pumps, verify necessary materials (repair sleeves, containment devices, etc.) are on-site and available, and any other items necessary to ensure that the Fayetteville Public Works Commission has confidence that the appropriate personnel can operate and maintain the temporary bypass pumping system. Should, for any reason, the Fayetteville Public Works Commission deem that the Contractor and/or their sub-contractor is not prepared to operate and maintain the temporary bypass pumping system, the temporary bypass pumping system shall not be started. The Contractor shall take all necessary steps to address any concerns to the satisfaction of the Fayetteville Public Works Commission. Upon completion of those actions, another coordination meeting shall be held, in order for the Fayetteville Public Works Commission to confirm that the Contractor and their sub-contractor is prepared to operate and maintain the temporary bypass pumping system. This process will be repeated until the Fayetteville Public Works Commission is satisfied that the Contractor and their sub-contractor are prepared to operate and maintain the temporary bypass pumping system. No additional contract time will be granted for this delay.

The temporary bypass pumping system shall run for a minimum of 24 hours, or longer as deemed by the Fayetteville Public Works Commission, prior to any activity occurring (cleaning, closed circuit television {CCTV}, etc.) within the main(s) being bypassed.

FLOW CONTROL PRECAUTIONS

Where the raw sewage flow will be blocked during the Work as a result of the temporary bypass pumping operation, the Contractor shall take all necessary precautions to protect the public health. No septic conditions shall be allowed due to Contractor's operations. The sewer system (mains, manholes, laterals, etc.) shall also be protected from damage. The following occurrences shall not be allowed:

1. No sewage shall be allowed to back up into any homes or buildings.
2. No sewage shall overflow any manholes, cleanouts or any other access to the sewers.
3. Users upstream of the project area shall be able to use all their water and sewer utilities without interruption or limitations.

If any of the above occur or are expected to occur, the Contractor shall take immediate action to alleviate one or all of the conditions. Additionally, the Contractor is required to observe the conditions upstream of the plug and be prepared to immediately increase bypass pumping or release the flows, as required. Any damage claims resulting from the Contractor's failure to properly maintain sewer flows shall be the Contractor's responsibility.

All sump pumps, bypass pumps, trash pumps or any other type pump which pulls sewage or any type of material out of the sanitary sewer system shall discharge into another sanitary sewer manhole, or appropriate vehicle or container acceptable to the Fayetteville Public Works Commission. Under no circumstances shall untreated sanitary sewer be discharged, stored or deposited on the ground, swale, road or open environment. The Contractor shall not allow any flow of sewage onto private property, streets, or into creeks and drainage systems. Damage due to negligence of the Contractor, including, but not limited to, flooded dwellings, damaged property, damaged driveways, etc., shall be corrected immediately by the Contractor at no additional cost to the Fayetteville Public Works Commission.

PLUGGING AND BLOCKING

In some applications, the wastewater flow may be plugged and contained within the capacity of the collection system. This shall only be done when it has been determined the system can accommodate the surcharging without any adverse impact. The Contractor has the sole responsibility for determining whether the system can accommodate surcharging. If this option is selected, the Contractor shall be responsible for continuously monitoring the system to ensure no sewer spills or overflows occur.

A sewer line plug shall be inserted into the line at a manhole upstream from the section being surveyed or repaired. The plug shall be so designed that all or any portion of the operation flows can be released. The Contractor shall secure the plug, to prevent it from being dislodged and moving downstream. Flows shall be bypassed for the initial CCTV inspection and shall be bypassed throughout the duration of the work, to include the final CCTV inspection. Flows shall be bypassed in accordance with the approved temporary bypass pumping plan. Upon acceptance of the work by the Fayetteville Public Works Commission, the temporary bypass pumping system shall be removed and flows restored.

PUMPING AND BYPASSING

The Contractor, when and where required, shall divert sewer flows for the sewer pipe rehabilitation process, cleaning, television inspection, pipe repairs, manhole replacement and/or rehabilitation, obstruction removals, or other related as required to complete the Work. The pumps and bypass lines shall be of adequate capacity and size to handle and prevent backup or overflow for all flows.

The temporary bypass pumping system shall be designed to maintain the flows necessary to meet the requirements of each particular location. The temporary sewer bypass system shall have the capacity to handle the flows outlined in these Contract Documents. The temporary sewer bypass system shall be sized to handle 2.5 times the average daily flow rate, or the specified peak flow – whichever is greater.

The Contractor shall be responsible for furnishing the necessary labor and supervision to set up, operate, and maintain the temporary bypass pumping system. A “set-up” consists of the necessary pumps, conduits and other equipment to divert the flow of sewage, from the start to finish of work performed. Each “set-up”, regardless of location, shall have Contractor personnel on-site at all times (24 hours a day, 7 days a week) and stationed at the pumps, unless otherwise approved by the Fayetteville Public Works Commission. The temporary bypass pumping system shall include:

- A minimum of one (1) redundant pump so that the temporary bypass pumping system is capable of transmitting the peak flow with the largest duty pump out of service.
- Pumps shall be provided with a means of automatic control via level sensing. Systems requiring manual starting and/or stopping shall not be allowed.
- All equipment (primary and secondary pumps) shall be equipped in a manner to keep noise to a maximum of 65 dBA at 30 feet.
- An automatic dialer (or similar) to immediately notify (in a sequential operation) Contractor and Fayetteville Public Works Commission personnel in the event of equipment failure. The automatic dialer shall be set to issue notifications prior to flow level reaching critical elevations and having a spill occur. All bypass pumps (regardless of location) shall be equipped with an automatic dialer (or similar).

The temporary bypass pumping system shall be provided in such a way as to maintain access for businesses and residences. The Contractor shall be responsible for determining the best location for the bypass equipment, and the need for any special provisions to ensure access for the residents and businesses. Such special provisions include, but are not limited to: installation of ramps, excavation and burial of the bypass lines, etc. The Contractor shall use bridges over the bypass lines, temporary lines under driveways, alternate routes, or other means to accomplish this item. The bypass plan submittal shall indicate the means of maintaining access. The Contractor bears all responsibility for the maintenance of any trenches, ramps, etc. necessary for the bypass operation.

Pumps, equipment, and bypass lines shall be continuously (24 hours a day, 7 days a week) monitored by on site Contractor personnel capable of starting, stopping, refueling and maintaining these pumps during the Work. The temporary bypass pumping system shall be provided with an automatic dialer (or other similar device) that will immediately notify (in a sequential operation) the Contractor and the Fayetteville Public Works Commission in the event of equipment failure. All bypass pumps (regardless of location) shall be equipped with an automatic dialer. This

automatic dialer (or similar) shall be set to issue notifications prior to flow levels reaching critical elevations and having a spill occur.

The automatic dialer shall be set to issue notifications through a sequential operation. Automatic dialers that are not set up for sequential notifications shall not be acceptable. The Contractor's personnel shall be the first to receive any notifications from the automatic dialer. The automatic dialer shall only notify the PWC personnel after all Contractor notifications have been ignored and/or not responded to. The Contractor shall properly adjust the level at which the automatic dialer initiates notification to provide adequate time for the sequential notification to occur. If the PWC personnel are notified by the automatic dialer, the PWC personnel shall assume that a spill is occurring or is imminent, and respond accordingly. The Contractor shall be responsible for all costs for the PWC to mobilize and respond to the notification, regardless if a spill occurred or not.

In some applications, it may be necessary to surcharge the system in order to ensure proper pump operation. This shall only be done when it has been determined the system can accommodate the surcharging without any adverse impact. The Contractor has the sole responsibility for determining whether the system can accommodate surcharging. In the event surcharging is necessary, the Contractor shall be responsible for continuously monitoring the system to ensure no sewer spills occur.

All bypass piping shall successfully pass a hydrostatic test prior to bypassing the sewer flows. The hydrostatic test pressure shall be no less than the expected discharge pressures, and shall be held for a minimum of one (1) hour. All testing shall be observed by the Fayetteville Public Works Commission. Testing shall be coordinated with the Fayetteville Public Works Commission a minimum of 24 hours in advance.

SPILL RESPONSE

The Contractor shall not discharge or pump any sewage, solids, or debris on the ground, streets, storm water system, ditches, or streams. Any sewage spills shall be immediately reported to the Fayetteville Public Works Commission Water Resources Construction Department, (910) 223-4716. After normal business hours, the Contractor shall contact the Fayetteville Public Works Commission Dispatch Center, (910) 678-7400 or (910) 323-0178. The Contractor shall take complete responsibility for all costs related to the clean-up of the spill, including any fines issued by the North Carolina Department of Environmental Quality (NC DEQ).

In the event that raw sewage (in any quantity) is spilled, discharged, leaked or otherwise deposited in the open environment, due to the Contractor's work, the Contractor is responsible for any cleanup of solids and disinfection of the area affected. This work will be performed at the Contractor's expense with no additional cost to the Fayetteville Public Works Commission. The Contractor is also responsible for complying with any and all regulatory requirements in regards to the size spill with no additional cost to the Fayetteville Public Works Commission. The Contractor shall cooperate fully with the Fayetteville Public Works Commission and the applicable State agencies in responding to and cleaning up the spill. Any work completed by the Fayetteville Public Works Commission in responding to a spill caused by the Contractor's operations shall be billed to the Contractor.

Where sewage has backed up into a property due to any aspect of the Contractor's operation, the Contractor shall immediately notify the Fayetteville Public Works Commission, inspect the property with the Fayetteville Public Works Commission and agree on remedial measures. The Contractor shall be responsible for all cleaning, repair and/or replacement of damaged property, temporary relocation of all occupants of the affected properties, if required, all to the satisfaction of the property owner. These actions shall be undertaken immediately upon learning of the backup. Cleaning shall be performed by firms specializing in this type of work. All costs associated with the cleaning, repair, replacement of damages, occupant accommodations, insurance and spill remediation shall be borne by the Contractor. All remediation measures required as part of a spill response are part of acceptance of the project, and final payment shall not be made until such time all required measures are addressed and approved by the appropriate regulatory agency.

*** END OF SECTION ***

02831 | CHAIN LINK FENCING

GENERAL

Where shown on the plans there shall be installed a "chain link" fence with all necessary posts, braces, top rail, gates, fabric, extension arms, and three strand barbed wire.

The erected fence shall meet the following requirements:

The enclosing fence shall have an overall fabric height of six feet (6') and an additional one foot (1') of three strand barbed wire, for a total height of seven (7'). The gates shall be seven feet (7') in overall height.

MATERIALS

Fabric

Fencing shall be chain link #9 gauge aluminized continuously woven wire 2" uniform square mesh without knots or ties, except for knuckling and barbing. Both the top and bottom edges of the fabric shall be barbed unless otherwise shown on the plans. The Contractor shall not piece together a number of short pieces of fence fabric.

Tensile Strength Test

Wire pickets of which this fabric is made to stand a tensile strength test of approximately 70,000 pounds per square inch based on the cross sectional area of the galvanized wire.

Framework

All posts and other appurtenances used in construction shall be hot-dipped, galvanized with a minimum of 1.8 oz. per square foot surface.

Line Posts

Hot dip galvanized "H" column (2" x 2 1/4") weight 4.1 pounds per linear foot, minimum carbon content 0.355. No used or open seam material will be permitted in posts or rails. (Alternate 2 1/2" O.D. galvanized pipe weight 3.65 pounds per linear foot or C-section line posts of the same dimension as H post, 0.120 in wall thickness and fabricated from steel conforming to ASTM A-570, Grade E.) Intermediate posts shall be evenly spaced no more than 10 feet apart on center.

Top Rail

Hot dip galvanized pipe 1 5/8" O.D., weight 2.27 pounds per linear foot protected with outside sleeve type couplings at least 7 inches long. No used or open seam material will be permitted.

Terminal Posts

End, corner and pull posts hot dip galvanized pipe 3" O.D. - 5.79 pounds per linear foot. Gate posts hot dip galvanized pipe of "H" construction as specified.

Tension Wire

A bottom tension wire 7 gauge, alzd. (0.4 oz./s.f.), 6 inches above grade. Wire shall be fastened to fabric with aluminum rings at 24" on center and to each intermediate post.

Extension Arms

Hot dip galvanized. Line post arms of pressed steel malleable base; end, and corner post arms of malleable iron; gate posts to have ornamental top. Each extension arm to carry three strands of barbed wire approximately 12 inches out from fence line. Barbed wires to be securely fastened in by means of self-locking grooves. The barbed wire shall support a minimum of 400 lbs. vertical dead load from tip of arm. The barbed wire shall be 4-point pattern composed of two strands of No. 12 1/2 gauge galvanized wire.

Gates

Frame to be galvanized pipe 2.0 inches O.D. weighing 2.27 pounds per foot. Each frame to be equipped with 3/8-inch diameter adjustable truss rods. Gateposts and corner posts shall be 3 inches O.D. weighing 5.11 pounds per foot. Gates are to be manufactured using 2" aluminum tubing in lieu of the specified Schedule 40 steel pipe. Gateposts and corner posts shall be 6 5/8" O.D. for swing gates (greater than 20 feet in length and 4" O.D. for slide gates, weighing minimum of 5.11 pounds per foot. Corner fittings to be heavy pressed steel or malleable castings. Fabric to be same as in fence. Gates to be completed with malleable ball and socket hinges, catch, stops and rest. Hinges to permit gate to swing back against fence, 180 degrees if required. Latches shall be arranged for padlocking so that the padlock will be accessible from both sides of the gate regardless of the latching arrangement.

Braces

Brace material to be hot dip galvanized and same as top rail, to be spaced midway between top rail and ground, and to extend from terminal post to first adjacent line post. Braces to be securely fastened to post by suitable connections, and then trussed from line post back to terminal post with 3/8 inch round rod equipped with a turnbuckle for adjusting.

Fittings

Hot dip galvanized. All fittings to be malleable, cast iron or pressed steel.

Fabric-Bands

Fabric to be fastened to line post with (9 gauge) fabric bands spaced approximately 18 inches apart, and to top rail with wires (9 gauge) spaces approximately 24 inches apart.

Locks

Locks will be provided by the Owner.

INSTALLATION

General

Installation shall be made in a workmanlike manner by skilled workers experienced in the erection of this type of fence and in accordance with the manufacturer's recommendations. The fence shall be erected on a previously prepared surface to the lines and grades indicated on the plans.

Post Setting

All posts shall be set plumb and in alignment into a 36-inch concrete footing of proper size and shape so as to furnish sufficient support to withstand any strain or shock ordinarily brought to bear on a fence of this character. The concrete strength shall be 3000 psi (ASTM C-94) and the foundations a minimum of 9 inches in diameter for line post and 12 inches for terminal post.

Concrete shall be thoroughly compacted so as to be free of voids and finished in a dome. Straight runs shall not exceed 500 feet between brace posts. Concrete shall cure a minimum of 72 hours before any further work is done on the posts.

Fabric

The fabric and barbed wire shall be stretched to the proper tension as recommended by the manufacturer and securely fastened to the framework members to result in a straight fence line without sagging. The bottom of the fabric shall be held as uniformly as is practicable to the finished grade.

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 Owner 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 of 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 Owner. 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.

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 with 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 Owner to finish grade, or typical cross section. The sod bed shall be excavate 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 increment or impending increment 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 Owner 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 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 pulverizers, drags, harrows or by other methods approved by the Owner. 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 Owner. 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 Owner. 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 Owner. 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 32o F.

Tamp and roll completed 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 Owner 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 (½"x ¾" 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 ¼" 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 Owner, make whatever arrangements necessary to insure an adequate supply of water to meet the needs of this Contract. The Contractor shall 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 approved 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 Owner. Limit watering to early morning or late afternoon to enable soil to 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 ½ inch water for the first three (3) weeks after area sodded.
- After the three (3) week period, water twice a week with a ¾ 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 insure 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 provisional 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 Owner. 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 Owner for an inspection and provisional acceptance of the sod. 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 sod.

Replacement of dead sod shall be performed within seven (7) days after notification by the Owner 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 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. 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.

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 Fayetteville Public Works Commission in writing. Disturbed sections shall not exceed one mile, without prior approval by the Fayetteville 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 Fayetteville 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 Fayetteville 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 Fayetteville 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:

POUNDS OF SEED PER ACRE

	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 Fayetteville 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 Fayetteville 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.

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03301 | CONCRETE CONSTRUCTION (UTILITY)

GENERAL

Concrete construction specified in this section shall be applicable to all "site work" and is not intended to cover general building specifications. The concrete work shall include all furnishing, hauling, fine grading and subgrade, form work, etc. and all incidentals necessary for completion of the work as it pertains.

MATERIALS

Concrete

The Contractor shall furnish and place concrete in strict accordance with the requirements of ACI 318 (most recent edition). Ready-mixed concrete from an approved mixing plan shall be used throughout the work and conform to the requirements of ASTM C-94 for batch, mixing, and transporting. Concrete shall be in accordance with the following requirements:

- A. Under Ground - Regular Weight Concrete

28-day compressive strength	3000 psi
Coarse aggregate	1 ½" max. size stone
Slump	2" minimum, 4" maximum
Air Entrainment	No requirement

- B. Walls, Slabs, Sidewalks, Curb and Gutter - Regular Weight Concrete

28-day compressive strength	3000 psi
Coarse aggregate	¾" max. size stone
Slump	2" minimum, 4" maximum
Air Entrainment	5 more or less 1

The Contractor shall submit for approval mix designs, designed and tested by an approved testing laboratory, following the requirements of ACI 318 for each class of concrete to be used on this project. Mix designs in excess of one year old shall be verified. The Contractor will be responsible for all costs involved in the mix design. Material suppliers and material proportions incorporated in the mix design and certification shall not change without written permission from the Public Works Commission.

Admixtures used to produce entrained or air shall be sulfated hydrocarbons or neutralized vinsol resins conforming to ASTM C-260. Calcium chloride, other accelerators, or "anti-freeze" shall not be used without written approval by the Public Works Commission.

Reinforcing Steel

Reinforcing bars shall be new billet stock and shall conform to ASTM A-615, Grade 60. Bars shall be deformed to conform to ASTM A-305. The Contractor shall check and submit for approval four (4) sets of shop and erection drawings prepared by the fabricator. Reinforcement detailing and placement shall conform to ACI 318. All reinforcing bars shall be tied in place according to approved erection drawings, using bar supports and accessories conforming to ACI 315. Laps or splices shall conform to ACI 318, and consist of the following minimum dimensions:

Tension Splices	36 Bar Diameters
Compression Splices	30 Bar Diameters

All reinforcing bars shall be tagged and stored in such manner as to be readily available at the time needed. Tag mark substitutions will not be made.

Welded wire mesh fabric reinforcing shall conform to the requirements of ASTM A-185. Lap splices shall be at least one full mesh plus 2" staggered to avoid continuous laps in either direction and securely wired or clipped.

GRADING

The Contractor shall use every effort to observe any possible misalignments in line or grade of the installed forms and will call such to the attention of the Public Works Commission promptly. The Contractor is cautioned that he shall be responsible for any damage to utility lines caused by his negligence. The Public Works Commission or his representative shall then inspect the forms and if approved, pouring operations may begin. Where unstable material exists, the Contractor shall remove such material to a depth required to provide a stable subgrade at no additional cost to the Public Works Commission.

FORM WORK

Metal forms shall be used throughout the work except for short, odd length sections and in accordance with ACI 301 and ACI 347 (most recent editions). Earth cuts may be used as forms for unexposed vertical surfaces on footings, provided the soil and workmanship allow an accurate and curable excavation. Forms shall be kept in good condition at all times. Any forms which have become out of shape or otherwise unsuitable shall be removed from the work. Forms shall be of such section and design that they will adequately support the concrete and any construction equipment used in the work. Form sections shall be provided with interlocking joints to insure that the forms are tightly jointed together free from movement. Forms shall be held in place by metal pins, not less than eighteen (18) inches in length, with fastenings of metal and wedges to insure a correct, rigid setting.

Forms shall be of the dimension required for the designed cross-section shown on the plans. Built up sections to attain the required depth will not be permitted.

Forms shall be set true to the lines and grades established by the Design Engineer or as indicated on the plans.

Forms shall be held rigidly in position and shall be of sufficient strength to resist springing out of line when concrete is placed.

PLACING CONCRETE

Prior to placing concrete, the subgrade shall be moistened and the contact side of the forms shall be cleaned and coated with a heavy oil. The Contractor shall not place any concrete without the forms, reinforcing steel and subgrade being inspected and approved by the Design Engineer. Placing of concrete is to be in accordance with ACI 304 (most recent edition). Water shall be removed from the excavation before placing concrete and water shall be diverted to prevent washing over freshly deposited concrete.

Concrete shall be placed as not to disturb concrete already in place and in such a manner as to require the minimum amount of lateral movement. Concrete shall be deposited in the forms without segregation. A tremie shall be used when the fall exceeds five (5) feet. Care shall be taken not to upset any forms during the concrete pouring operations. Any concrete showing misalignment due to form movement shall be removed and replaced at no additional cost to the Public Works Commission.

All concrete shall be consolidated in accordance with ACI 309 (most recent edition). Mechanical vibrators shall be operated by experienced workmen. Spading and rodding may be required to supplement mechanical vibration. Consolidation shall be adequate to remove any voids and after removal of the forms, no honeycomb shall be present. Should any honeycomb be present, the Design Engineer shall determine if the honeycomb is of a minor nature, the voids may be filled with mortar as approved by the Design Engineer.

All concrete within forms shall be brought to true section by the use of an approved straight edge and shall be tamped with straight edge to bring mortar to the surface, after which it shall be floated smooth by means of wood floats. No steel floats will be permitted. After true surface of section has been obtained, and after initial set has taken place, the entire surface shall be brushed with a dampened brush. All joints and all exposed edges shall be rounded off with approved jointing and edging tools. The type of finish required will be specified in the specific item of work

specified or indicated on the drawings. All exposed surfaces of retaining walls, structures, etc. shall be given a Class 2 finish with ¼ inch chamfered edges.

No more concrete shall be laid than can be properly finished and covered during the daylight, unless adequate artificial light satisfactory to the Design Engineer is provided.

Immediately after finishing operations have been completed, the entire surface of the concrete shall be sprayed with an approved curing compound. The use of liquid retarding agents shall conform to standards specified by current AASHTO or ASTM Specifications.

Cold weather concreting shall be in accordance with ACI 306 (most recent edition) and hot weather concreting shall be in accordance with ACI 305 (most recent edition). Concreting shall be done when weather conditions are favorable unless otherwise directed by the Design Engineer. Concrete operations shall be discontinued when the temperature of 40 degrees Fahrenheit is reached on a falling thermometer. No concreting shall be attempted when local weather bureaus indicate temperatures below freezing within the ensuing 24 hours unless proper precautions are made to protect concrete by covering with straw or other thermal insulation satisfactory to the Design Engineer. The Contractor shall be responsible for the quality and strength of the concrete laid during cold weather or hot weather and any concrete damaged by frost action or freezing shall be removed and replaced as directed by the Design Engineer and/or the Public Works Commission at the Contractor's expense.

Forms shall not be removed from the concrete for a minimum of 7 days, unless approved by the Design Engineer. The Contractor shall apply a curing compound or provide measures to maintain moisture for proper curing at his expense, if early form removal is approved. Immediately after the forms have been removed, all honeycomb areas shall be repaired (with one part cement and two parts sand) and earth backfill material shall be placed adjacent to the finished concrete and smoothed off to prevent an accumulation of standing water, subgrade saturation or under wash in the event of rain.

Both pedestrian and vehicle traffic shall be excluded from crossing the concrete for a period of 14 days by the erection and maintenance of suitable barricades. Contractor shall be responsible for any damage resulting from traffic within the 14 day period and he shall remove and replace any concrete damaged as directed by the Design Engineer and/or Public Works Commission.

MASONRY MATERIALS

Brick shall be in accordance with ASTM C-32 Grade MS laid in full beds of mortar with shove joints.

Concrete masonry blocks shall be in accordance with ASTM C-139. Blocks shall be at least 5", but not more than 8" in thickness nor less than 8" in length and of such shape that the joints can be effectively sealed and bonded with cement mortar.

Cement mortar for brick work shall be in accordance with ASTM C-270, Type M. Use Type IIA cement in accordance with ASTM C-150.

TESTING

The requirements of ACI318 (most recent edition) shall be used to control the evaluation of all concrete strengths. The strength is to be checked during construction by four (4) cylinders at the option and cost of the Public Works Commission, of which 1 shall be broken at 7 days, 2 at 28 days. If the specified strength is not achieved in 28 days, 1 reserved shall be stored and broken as specified by the Design Engineer. Cylinders shall be made and stored in accordance with ASTM C-13. Cylinders shall be for each day concrete is poured in excess of 10 cubic yards of each different type of concrete, as determined by the Design Engineer. All additional expenses required because of the failure of the materials to meet routine testing requirements, or poorly scheduled concrete deliveries, shall be borne by the Contractor.

09801 | ANTI-MICROBIAL ADMIXTURE

GENERAL

All reinforced concrete precast manholes shall include a liquid anti-microbial admixture to render the concrete uninhabitable for bacterial growth. The admixture shall be included in the fabrication of the manhole by an approved concrete precast manhole manufacturer. Coatings applied to the interior walls of the manhole shall not be acceptable.

Further, all field mixed mortar, utilized in concrete precast manholes, shall include the anti-microbial admixture. The intent and purpose of this specification is to render all concrete and/or mortar within sanitary sewer service uninhabitable for bacterial growth. Any defects shall be cause for the replacement and correction of such defect as directed by the Public Works Commission, at no expense to the Public Works Commission.

RELATED SECTIONS

- A. 02730 – Sanitary Sewer Systems

REFERENCES

- A. ASTM C478 – Standard Specification for Precast Reinforced Concrete Manhole Sections
- B. ASTM C1443 – Standard Specification for Precast Reinforced Concrete Pipe
- C. ASTM C1577 – Standard Specification for Precast Reinforced Concrete Pipe

SUBMITTALS

All submittals shall be provided in accordance with the Contract Documents, and the requirements outlined herein. The Contractor shall submit, in accordance with the Contract Documents, product data, certifications, and product data, to include the following:

1. U.S. Environmental Protection Agency (EPA) registration number.
2. Documentation that the product has a minimum of 10 years of successful prevention of microbial induced corrosion in sanitary sewers.
3. Documentation that the precast facility is certified by the anti-microbial manufacturer.
4. Documentation from the precast facility stating that the correct amount and correct mixing procedure was followed for all anti-microbial concrete.

QUALITY ASSURANCE

A color identifier shall be applied to the interior of each concrete piece fabricated with the anti-microbial admixture. Each piece shall also be plainly stenciled with the name of the anti-microbial admixture on the exterior of each piece.

MATERIALS

All manholes shall conform to PWC standard specifications and details, unless otherwise approved in writing by the Public Works Commission. All concrete and mortar utilized in the construction of the manholes shall contain an anti-microbial admixture.

Anti-Microbial Admixture:

The liquid anti-microbial admixture shall be used in accordance with the manufacturer's recommendations. The amount of the admixture shall be included in the total water content of the concrete or mortar mix design. The admixture shall be added to the concrete or mortar mix water, to ensure even distribution of the admixture throughout the concrete or mortar mix. When properly prepared, the anti-microbial admixture shall render the concrete or mortar uninhabitable for bacterial growth.

The anti-microbial admixture shall be ConShield or approved equal. The ConShield liquid anti-microbial admixture can be obtained from ConShield Technologies, Inc. or an approved precast facility.

Field Repairs:

Field repairs to the precast concrete or mortar shall be in accordance with the admixture manufacturer's recommendations. All field repairs shall be completed in accordance with PWC requirements.

ACCEPTANCE

Acceptance of the concrete and mortar with the anti-microbial admixture shall be based on conformance with the requirements herein, the Public Works Commission's review of the installed manhole, and results of all testing.

09804 | SPECIAL COATINGS – EPOXY LINING DUCTILE IRON PIPE AND FITTINGS

GENERAL

The interior surfaces of all ductile iron pipe and fittings in sanitary sewer service shall be fully coated with a ceramic epoxy lining. The lining system shall be a two component, amine cured novalac epoxy. The ceramic epoxy lining shall be applied to ductile iron pipe free of any other interior lining material. The finish coat shall be applied to yield a minimum dry film thickness of 40 mils for a complete lining. Any defects in the lining shall result in the pipe or fitting being replaced, at no additional cost to the Public Works Commission.

RELATED SECTIONS

- A. 02730 – Sanitary Sewer Systems

REFERENCES

- A. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus
- B. ASTM C 413 – Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
- C. ASTM C 868 – Standard Test Method for Chemical Resistance of Protective Linings
- D. ASTM D 714 – Standard Test Method for Evaluating Degree of Blistering of Paints
- E. ASTM D 870 – Standard Practice for Testing Water Resistance of Coatings Using Water Immersion
- F. ASTM D 1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
- G. ASTM D 1653 – Standard Test Methods for Water Vapor Transmission of Organic Coatings
- H. ASTM D 2240 – Standard Test Method for Rubber Property – Durometer Hardness
- I. ASTM D 2370 – Standard Test Method for Tensile Properties of Organic Coatings
- J. ASTM D 2583 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
- K. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- L. ASTM D 4060 – Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- M. ASTM D 4400 – Standard Test Method for Sag Resistance of Paints Using a Multinotch Applicator
- N. ASTM D 4541 – Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- O. ASTM G 8 – Standard Test Methods for Cathodic Disbonding of Pipeline Coatings
- P. ASTM G 95 – Standard Test Method for Cathodic Disbondment Test of Pipeline Coatings
- Q. ASTM G154 – Standard Practice for Operating Fluorescent Ultraviolet Lamp Apparatus for Exposure of Nonmetallic Materials

Unless otherwise specified, references to documents shall mean the documents in effect at the time of bid. If the referenced document(s) have been discontinued by the issuing organization, references to those documents shall mean the replacement documents or the last version of the document before it was discontinued.

Where conflicts exist between the standards and this specification, the more stringent shall apply.

MATERIALS

All ductile iron pipe and fittings shall be in accordance with the Public Works Commission standard specification 02730 – Sanitary Sewer Systems and these Contract Documents.

The lining material shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment (no silica fume, fly ash, or alumina dust). The lining shall be both coal tar (polycyclic aromatic hydrocarbons) free and hazardous air polluting solvents (HAPS) free. The lining system shall be 100% solids by volume.

The ceramic epoxy lining system shall be the Perma-Shield PL Series 431 as manufactured by Tnemec Company, Inc., Permax-CTF as manufactured by Permite Corporation, or approved equal.

The ceramic epoxy lining system shall meet the following minimum performance requirements:

- A. Abrasion (ASTM D 4060, CS-17 wheel, 1,000 grams) – 76 mg loss
- B. Adhesion (ASTM D 4541) – not less than 1,860 psi
- C. Severe Wastewater Analysis Test (150oF, 500 ppm H2S, 4,000 ppm NaCl, 10% sulfuric acid, EIS Permeation Analysis) – Initial impedance of 11.2 (log-z). No blistering, cracking, checking, or loss of adhesion. Reduction in electrical impedance of 0.5 after 28 days of exposure.
- D. Cathodic Disbondment (ASTM G 8, 1.5 V, Classification Group A) – no more than 0.000 inch disbonded equivalent circle diameter.
- E. Dielectric Strength (ASTM D 149) – greater than 600 V per mil
- F. Hardness (ASTM D 2240) – Shore D hardness of 79
- G. Impact (ASTM D2794) – No visible cracking or delamination after 160 inch-pounds direct impact.
- H. Chemical resistance by immersion testing, in accordance with ASTM D 714, as outlined in the following table:

20% Sulfuric Acid at 77° F	2 years, no effect
25% Sodium Hydroxide at 140° F	2 years, no effect
5% Sodium Chloride at 77° F	2 years, no effect
Distilled Water at 160° F	2 years, no effect

- I. Salt Spray (ASTM B 117) – No blistering, cracking, rusting, or delamination of film. No rust creepage at scribe after 1,000 hours.
- J. Sag Resistance (ASTM D 4400) – Not less than 90 mills wet film thickness.
- K. Water Absorption (ASTM C 413) – 0.0 percent water absorption
- L. Water Vapor Transmission (ASTM D 1653, Method B, Wet Cup, Condition C) – 1.25 g/m2 per 24 hour water vapor transmission and 0.09 perms water vapor permeance.

The above requirements shall be verified and tested by an approved testing laboratory. Copies of the laboratory test showing that the lining conforms to the specifications shall be furnished to the Public Works Commission upon written request and certified by the Supplier.

QUALITY ASSURANCE

The manufacturer of the specified coating system shall have a minimum of 10 years experience in manufacturing high performance epoxy coating systems. The epoxy coating material shall be from a single manufacturer.

Application of the ceramic epoxy lining system shall be in accordance with the manufacturer’s requirements. Preparation of the ductile iron pipe to be lined shall be completed by an installer approved by the lining system manufacturer.

SUBMITTALS

In accordance with these Contract Documents, the Contractor shall submit the following:

- 1. Manufacturer’s certification that the coatings comply with the specified requirements and are suitable for the intended application.
- 2. Product data sheet.
- 3. Material Safety Data Sheet.
- 4. Copies of test data for all the physical, chemical, and permeation properties listed within this specification.

WARRANTY

The ceramic epoxy lining manufacturer shall warranty its products as free from material defects for a period of five (5) years. The Public Works Commission will solely determine whether the pipe should be replaced if any defects are discovered in the lining within the warranty period. All costs to replace the pipe or fitting, including but not limited to, bypass pumping, excavation, and traffic control shall be the manufacturer's responsibility.

APPLICATION OF LININGS

Application of the ceramic lining system shall be completed by an installer approved by the manufacturer of the lining system.

Surface Preparation: All interior barrel and joint surface areas which will be exposed to the sewer liquids and gases shall be prepared for lining by removing all laitance, form oil and other loose, foreign or deleterious materials which would adversely affect the bond of the lining compound of the pipe surface. All areas to receive the protective coating shall be abrasive blasted using compressed air nozzles with sand or grit media. The entire surface to be lined shall be struck with blast media so that all rust, loose oxides, etc., are removed from the surface. Any area where rust appears before lining must be re-blasted.

Qualification of Applicator and Workmen: The ceramic epoxy lining shall be applied by a competent firm with a ten (10) year history of lining sewer pipe. The workmen employed by the applicator shall be experienced and competent in the application and inspection of the lining compound to be applied. The Public Works Commission shall have the right to require the applicator to furnish bonds covering proper performance and guaranteeing the payment of all obligations arising as a result of improper materials and workmanship.

Equipment: All application equipment shall be as recommended by the suppliers of the lining compound.

Application Technique: After the surface has been thoroughly prepared for application, the interior of the pipe shall be coated with the ceramic epoxy to a minimum dry film thickness of 40 mils. No lining shall take place when the substrate or ambient temperature is below 40°F. The surface must be dry and dust free. The number of coats of lining material applied shall be as recommended by the lining manufacturer, but in no case shall it be applied above the dry film thickness per coat recommended by the lining manufacturer. The time between coats shall be that specified by the lining manufacturer.

Repair: All damaged areas or test areas shall be repaired by the lining manufacturer prior to shipment, in accordance with the manufacturer's recommendation, so that the repaired areas are equal to the undamaged lined areas in all respects.

Inspection: All pipe linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done in accordance with the method outlined in SSPC-PA-2 film thickness rating. The interior linings shall also be tested for pinholes with a non-destructive 2,500 volt test. Any defects found shall be repaired as noted above. All ceramic epoxy lined pipe and fittings shall be visually inspected for any defects, including runs, sags, or debris within the lining. All repairs shall be performed by the manufacturer prior to shipment.

Markings: Each joint, manhole unit, or fitting shall be marked with the date of application of the coating system, the date of inspection, and the numerical sequence of application on that date.

Shipping and Handling: Equipment used to handle and transport the lined pipe shall be suitably designed and operated not to damage the lining. Any damaged pipe or fitting shall be replaced at no cost to the Public Works Commission.

INSTALLATION

Cutting Pipe: The Contractor shall cut the pipe without damaging the pipe or interior ceramic epoxy coating. All cuts shall be at right angles to the pipe axis. All cut ends shall be dressed with a power grinder to remove all sharp edges. The cut ends of push-on joint pipe shall be beveled in accordance with the pipe manufacturer's instructions.

All field cuts shall be coated and sealed prior to installation. Application of the lining shall be done in accordance with the ceramic epoxy lining manufacturer's recommendations.

Handling: All ceramic epoxy lined pipe and fittings shall be handled only from the outside. No forks, chains, straps, hooks, cables, or other equipment shall be placed inside the pipe and fittings for lifting, positioning, or installation. The pipe and fittings shall not be dropped or unloaded by rolling. The pipe and fittings shall not strike sharp objects while moving or unloaded. Ductile iron pipe shall not be placed on grade utilizing hydraulic pressure from machinery or hammers. The use of nylon straps or other similar lifting devices are to be used.

Pipe Installation: All pipe and fittings shall be installed in accordance with PWC standard specifications 02222 – Excavation, Trenching, and Backfilling for Utility Systems, 02730 – Sanitary Sewer Systems, and these Contract Documents.

09960 | AERIAL CROSSINGS HIGH PERFORMANCE COATINGS

GENERAL

The work of this section includes the surface preparation and painting of all steel encasement and ductile iron pipe surfaces for aerial crossings. The work shall be performed on site, unless otherwise noted in these contract documents.

RELATED SECTIONS

Without limiting the general aspects of other requirements of these specifications, all surface preparation, coating and painting of surfaces shall conform to the applicable requirements of the Steel Structures Painting Council (SSPC), National Association of Corrosion Engineers (NACE), and the manufacturer's printed instructions.

The Fayetteville Public Works Commission's (PWC) decision shall be final as the interpretation and/or conflict between any of the referenced specifications and standards contained herein.

QUALITY ASSURANCE

General: Quality assurance procedures and practices shall be utilized to monitor all phases of surface preparation, application, and inspection throughout the duration of the project. Procedures or practices not specifically defined herein may be utilized provided they meet recognized and accepted professional standards and are approved by the PWC.

Surface Preparation: Surface preparation will be based upon comparison with: "Pictorial Surface Preparation Standards for Painting Steel Surfaces", SSPC-Vis-1 and ASTM Designation D2200; "Standard Methods of Evaluating Degree of Rusting on Painted Steel Surfaces" SSPC-Vis-2 and ASTM Designation D610; "Visual Standard for Surfaces of New Steel Airblast Cleaned with Sand Abrasive".

Application: No coating or paint shall be applied: When the surrounding air temperature or the temperature of the surface to be coated is below the minimum required temperature for the specified product; too wet or damp surfaces or in fog or mist; when the temperature is less than 5 degrees F. above the dewpoint; or when the air temperature is expected to drop below 40 degrees F. within six (6) hours after application of coating. Dewpoint shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychrometric Tables. If any of the above conditions are prevalent, coating or painting shall be delayed or postponed until conditions are favorable. The day's coating or painting shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.

Thickness and Holiday Checking: Thickness of coatings and paint shall be checked with a non-destructive, magnetic type thickness gauge. Steel surfaces requiring holiday detection shall conform to NACE Standard Practice for Holiday Detection, SP 0188. All pinholes shall be marked, repaired in accordance with the manufacturer's printed recommendations, and retested. No pinholes or other irregularities will be permitted in the final coating.

Inspection Devices: The Contractor shall furnish, until final acceptance of coating and painting, inspection devices in good working condition for detection of holidays and measurement of dry-film thickness of coating and paint. The Contractor shall also furnish U.S. Department of Commerce; National Bureau of Standard certified thickness calibration plates to test accuracy of dry film thickness gauges and certified instrumentation to test accuracy of holiday detectors.

All necessary testing equipment shall be made available for the PWC's use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the PWC.

Inspections: A NACE Level 3 Certified Coating Inspector/technical representative from the coating manufacturer shall visit the job site to review the project and to support the Contractor's personnel and/or the PWC as needed and/or requested. Visits shall be made after shop priming is completed and after each field applied coating is completed (including stripe coat). Additional visits shall be made as needed and/or requested by PWC or Contractor. It is the responsibility of the Contractor to schedule all inspections with the NACE Level 3 Certified Inspector. It is the responsibility of the Contractor to notify the PWC a minimum 48 hours prior to an inspection.

SAFETY AND HEALTH REQUIREMENTS

General: In accordance with requirements set forth by regulatory agencies applicable to the construction industry and manufacturer's printed instructions and appropriate technical bulletins and manuals, the Contractor shall provide and require use of personnel protective lifesaving equipment for persons working on or about the project site.

Head and Face Protection and Respiratory Devices: Equipment shall include protective helmets, which shall be worn by all persons while in the vicinity of the work. In addition, workers engaged in or near the work during sandblasting shall wear eye and face protection devices and air purifying half mask or mouthpiece respirators with appropriate filters. Barrier creams shall be used on any exposed areas of skin.

Ventilation: Where ventilation is used to control hazardous exposure, all equipment shall be explosion-proof. Ventilation shall reduce the concentration of air contaminant to the degree a hazard does not exist. Air circulation and exhausting of solvent vapors shall be continued until coatings have fully cured.

Sound Levels: Whenever the occupational noise exposure exceeds maximum allowable sound levels, the Contractor shall provide and require the use of approved ear protective devices.

Confined Space: When applicable it is mandatory that all work be performed in compliance with the Occupational Safety and Health Administration's (OSHA) rules and regulations for working in confined space. Atmospheres within confined spaces as defined by the OSHA are classified as being either a Class A, Class B or Class C environment.

MATERIALS

- A. Materials specified are those that have been evaluated for the specific service.

Manufacturer's color charts shall be submitted to the PWC at least thirty (30) calendar days prior to paint application. General contractor and painting contractor shall coordinate work so as to allow sufficient time for paint to be delivered to the jobsite.

- B. All materials shall be brought to the jobsite in original, sealed containers. They shall not be used until the PWC has inspected contents and obtained data from information on containers or labels. Materials exceeding storage life recommended by the manufacturer shall be rejected.

1. All coatings and paints shall be stored in enclosed structures to protect them from weather and excessive heat or cold. Flammable coatings or paint must be stored to conform to Local, State, and Federal safety codes for flammable coating or paint materials. At all times, coating and paints shall be protected from freezing.

2. Coating Systems:

Steel and Ductile Iron:

Shop Application:

Surface Preparation: SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning to remove all existing coatings and provide a minimum angular anchor profile of 2.0 mils.

1st Coat: Moisture Cured Zinc-Rich Polyurethane applied at 2.5 –3.5 dry mils.
(Tnemec Series 94H20 Hydro-Zinc or Sherwin Williams Corathane 1 GalvaPac Zinc Primer)

OR

Organic Zinc Rich Epoxy applied at 3.0-5.0 dry mils.
(Carboline Carbozinc 859)

Surface Preparation: Pressure wash the surface to remove oils, dirt, dust, or other foreign contamination. SSPC-SP3 Power Tool Cleaning to all rusted abraded bare metal areas. Feather any edges smooth. Surface shall be clean and dry.

Spot Prime: Moisture cured aromatic polyurethane applied at 3.0-4.0 dry mils.
(Tnemec Series 1 Omnithane or Sherwin Williams Corathane 1 GalvaPac Zinc Primer)

OR

Phenalkamine Epoxy applied at 5.0-10.0 dry mils.
(Carboline Carbomastic 615)

2nd Coat: Polyamidoamine Epoxy applied at 4.0-6.0 dry mils.
(Tnemec Series N69 Hi-Build Epoxoline II or Sherwin Williams Macropoxy 646 FC Epoxy)

OR

Epoxy Polyamide applied at 4.0-6.0 dry mils.
(Carboline Carboguard 60)

3rd Coat: Aliphatic Acrylic Polyurethane applied at 2.0-3.0 dry mils
(Tnemec Series 73U Endura-Shield, Sherwin Williams Hi-Solids Polyurethane, or Carboline Carbothane 133HB)

Stripe Coat: During the application process both the primer and intermediate coat shall be brush or roller applied to all weld seams, sharp angles, edges, nuts and bolts.

INSTALLATION

- **General:**

Pre-Paint Meeting: All parties, to include the owner, contractor, installer, any sub-contractors and the manufacturer's NACE Level 3 Certified Manufacturer's Representative shall meet prior to starting the project to review the specification and discuss job specific expectations, needs and requirements.

All surface preparation, coating and painting shall conform to applicable standards of the SSPC, NACE, and the manufacturer's printed instructions. Material applied prior to approval of the surface by the manufacturer's technical representative shall be removed and reapplied to the satisfaction of the Level 3 NACE Certified Inspector at the expense of the Contractor.

All work shall be performed by skilled craftsmen qualified to perform the required work in a manner comparable with the best standards of practice. Continuity of personnel shall be maintained and transfers of key personnel shall be coordinated with the PWC.

Dust, dirt, oil, grease or any foreign matter that will affect the adhesion or durability of the finish must be removed by washing with clean rags dipped in an approved cleaning solvent and wiped dry with clean rags.

The Contractor's coating and painting equipment shall be designed for application of materials specified and shall be maintained in first class working condition. Compressors shall have suitable traps and filters to remove water and oils from the air. Contractor's equipment shall be subject to approval of the PWC.

Application of the first coat shall follow immediately after surface preparation and cleaning and before rust bloom or flash rusting occurs. Any cleaned areas not receiving first coat within this period shall be re-cleaned prior to application of first coat.

A NACE Level 3 Certified Coating Inspector/technical representative from the coating manufacturer shall visit the job site to review the project and to support the Contractor's personnel and/or the Fayetteville Public Works Commission (PWC) as needed and/or requested. Visits shall be made after shop priming is completed and after each field applied coating is completed (including stripe coat). Additional visits shall be made as needed and/or requested by PWC or Contractor. It is the responsibility of the Contractor to schedule all inspections with the NACE Level 3 Certified Inspector. It is the responsibility of the Contractor to notify the PWC a minimum 48 hours prior to an inspection.

- **Surface Preparation:**

The latest revision of the following surface preparation specifications of the SSPC and NACE shall form a part of this specification:

1. Solvent Cleaning (SSPC-SP1): Removal of oil, grease, soil and other contaminants by use of solvents, emulsions, cleaning compounds, steam cleaning or similar materials and methods which involve a solvent or cleaning action.
2. Hand Tool Cleaning (SSPC-SP2): Removal of loose rust, loose mill scale and other detrimental foreign matter to degree specified by hand chipping, scraping, sanding and wire brushing.
3. Power Tool Cleaning (SSPC-SP3): Removal of all loose mill scale, loose rust, loose paing, and other loose detrimental foreign matter by hand chipping, scraping, sanding, and wire brushing.
4. Commercial Blast Cleaning (SSPC-SP6/NACE 3): Blast Cleaning until at least 66 percent of each element of surface area is free of all visible residues.

Blast cleaning for all surfaces shall be by dry method unless otherwise directed.

Particle size of abrasives used in blast cleaning shall be that which will produce a 1.5 – 2.0 mil (37.5 microns - 50.0 microns) surface profile or in accordance with recommendations of the manufacturer of the specified coating or paint system to be applied.

Abrasive used in blast cleaning operations shall be new, washed, graded and free of contaminants that would interfere with adhesion of coating or paint and shall not be reused unless specifically approved by the PWC.

During blast cleaning operations, caution shall be exercised to insure that surrounding existing coatings or paint are not exposed to abrasion from blast cleaning.

The Contractor shall keep the area of his work and the surrounding environment in a clean condition. He shall not permit blasting materials to accumulate as to constitute a nuisance or hazard to the accomplishment of the work, the operation of the existing facilities, or nuisance to the surrounding environment.

Blast cleaned surfaces shall be cleaned prior to application of specified coatings or paint. No coatings or paint shall be applied over damp or moist surfaces.

Specific Surface Preparation: Surface preparation for the specific system shall be as noted in Section 2.01 Paragraph B.2.

APPLICATION

- General:

Coating and paint application shall conform to the requirements of the Steel Structures Painting Council Paint Application Specification SSPC-PA1, latest revision, for "Shop, Field and Maintenance Painting," and the manufacturer of the coating and paint materials.

Each application of coating or paint shall be applied evenly, free of brush marks, sags, runs, with no evidence of poor workmanship. Care shall be exercised to avoid lapping on glass or hardware. Coatings and paints shall be sharply cut to lines. Finished surfaces shall be free from defects or blemishes.

Protective coverings or drop cloths shall be used to protect floors, fixtures, and equipment. Care shall be exercised to prevent coatings or paint from being spattered onto surfaces that are not to be coated or painted. Surfaces from which materials cannot be removed satisfactorily shall be recoated or repainted as required to produce a finish satisfactory to the PWC.

When two coats of coating or paint are specified, where possible, the first coat shall contain sufficient approved color additive to act as an indicator of coverage or the two coats must be of contrasting color.

Film thickness per coat specified in Section 2.01 Paragraph B.2 is the minimum required. If roller application is deemed necessary, the Contractor shall apply additional coats as to achieve the specified thickness.

All material shall be applied as specified.

All welds, edges and other irregular surfaces shall receive a brush coat of the specified product prior to application of the first complete coat.

After completion of surface preparation as specified for the specific system, materials shall be applied as noted in Section 2.01 Paragraph B.2.

Colors: Submittals shall be made to the PWC for approval prior to application.

Where appropriate all solvent vapors shall be completely removed by suction-type exhaust fans and blowers before placing in operating service.

- Clean Up:

Upon completion of the work, all staging, scaffolding, and containers shall be removed from the site or destroyed in a manner approved by the PWC. Coating or paint spots and oil or stains upon adjacent surfaces shall be removed and the jobsite cleaned. All damage to surfaces resulting from the work of this section shall be cleaned, repaired, or refinished to the satisfaction of the PWC at no cost to the PWC.

WARRANTY

The Contractor will warrant the work free of defects in material and workmanship for a period of one (1) year from the acceptance of the work. At the end of one (1) year, as scheduled by the PWC, the one (1) year anniversary inspection is to be conducted. The Contractor will correct any deficiencies found with no cost to the PWC. Inspections shall be conducted to conform to PWC requirements.

APPENDIX A

MAZARICK PARK APPROXIMATE CONSTRUCTION AREA



Shadowlawn Aerial Sewer Replacement
Approximate Area of Construction in Mazarick Park
 Fayetteville, NC

1 inch = 125 feet

Date: 7/26/2021

Document Path: \\unc\krc\mreed.com\inasunil\Data\Proj\0253210024\Water\91-GIS\91b-Map Doc\Mazarick Park Exhibit.mxd

APPENDIX B

GEOTECHNICAL REPORT



Report of Subsurface Exploration and Geotechnical Engineering Evaluation

FAYPWC SHADOWLAWN AERIAL CROSSING

Fayetteville, North Carolina

F&R Project No. 66Y-0029

Prepared For:



*1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606*

Prepared By:

Froehling & Robertson, Inc.
*310 Hubert Street
Raleigh, North Carolina 27603*

May 28, 2020



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

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May 28, 2020

Ms. Nisha Thuruthy, PE, PMP
Project Engineer
McKim & Creed
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606



Subject: Report of Subsurface Exploration & Geotechnical Engineering Evaluation
FAYPWC Shadowlawn Aerial Crossing
Raleigh, North Carolina
F&R Project No. 66Y-0029

Dear Ms. Thuruthy:

Froehling & Robertson, Inc. (F&R) has completed the authorized subsurface exploration and geotechnical engineering evaluation for the above-referenced project. Our services were performed in general accordance with F&R's Proposal No. 1966-01038 dated October 15, 2019. The attached report presents our understanding of the project, reviews our exploration procedures, describes existing site and general subsurface conditions, and presents our geotechnical evaluations and recommendations for design and construction of the project.



We have enjoyed working with you on this project. Please contact us if you have any questions regarding this report or if we may be of further service.

Sincerely,
FROEHLING & ROBERTSON, INC.

 Mohammad Kayser
May 28 2020 11:21 AM


Mohammad Kayser, Ph.D., P.E.
Geotechnical Engineer



 May 28 2020 11:17 AM


Michael S. Sabodish, Ph.D., P.E.
Geotechnical Services Manager

Reviewed by: W. Patrick Alton, P.E., Assistant Branch Manager



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APPENDICES

APPENDIX I

Site Vicinity Map, Figure No. 1
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APPENDIX IV

GBA Document "Important Information
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Key to Soil Classification
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Boring Logs

APPENDIX III

Laboratory Test Results



1.0 PURPOSE & SCOPE OF SERVICES

The purpose of the subsurface exploration and geotechnical engineering evaluation was to explore the subsurface conditions in the areas of the proposed aerial crossing, and to provide geotechnical engineering recommendations that can be used during the design and construction phases of the project.

F&R's scope of services included the following:

- Completion of four (4) soil test borings (B-1 to B-4) to depths ranging from 15 to 50 feet below the existing ground surface. Borings B-1 and B-2 were performed along the proposed sewer line alignment. Borings B-3 and B-4 performed within the vicinity of the proposed aerial crossing location;
- Preparation of typed boring logs and development of subsurface profiles;
- Performing geotechnical laboratory index and corrosivity testing on representative soil samples;
- Performing a geotechnical engineering evaluation of the subsurface conditions with regard to their suitability for the proposed construction; and
- Preparation of this report by professional engineers.

Corrosivity tests were not completed at the time of this report preparation. These test results will be submitted under a separate cover letter once the test results are available.

2.0 PROJECT INFORMATION

2.1 SITE DESCRIPTION

The project site is located along Little Cross Creek trail just southeast of the intersection of Shadowlawn Drive and N Pearl Street in Fayetteville, North Carolina (see Figure No. 1 – Site Vicinity Map). We understand that the project will consist of the replacement of approximately 240 linear feet (LF) of aerial sanitary sewer line adjacent to Mazarick Park which is located just east of the site. The proposed sewer line will consist of 16-inch diameter ductile iron pipe incased in 24 inch diameter steel.

The project site primarily consists of moderately to heavily wooded undeveloped land. Based on our site visit conducted on March 17, 2020 and Cumberland County GIS data, the site generally appears to be located in a floodplain area. A stream generally runs at the site parallel to Shadowlawn Drive in a north to south orientation towards Little Cross Creek. The sewer line will cross the stream using an aerial crossing (see Figure No. 2A – Boring Location Plan).

Based on the survey map provided by McKim & Creed, the site generally slopes downward from south to north with ground surface elevations (EL) within the project site ranging from about 116 to 128 feet.



2.2 PROPOSED CONSTRUCTION

Based on information provided by McKim & Creed and our site reconnaissance visit conducted on March 17, 2020, the existing aerial sewer crossing pier foundations were damaged during Hurricane Matthew and need to be replaced. A project plan with details related to the proposed construction was not available at the time of this report preparation.

Based on the loading information provided by McKim & Creed, the maximum structural loads at the piers are: compression = 8 kips and lateral = 4 kips.

We anticipate the aerial crossing will be supported on driven piles. The span length of the aerial crossing is unknown.

3.0 EXPLORATION PROCEDURES

3.1 SUBSURFACE EXPLORATION

F&R advanced a total of four soil test borings (B-1 to B-4) at the approximate locations shown on the Boring Location Plans presented as Figures 2A and 2B in Appendix I. The soil test borings were advanced to depths ranging from 15 to 50 feet below the existing ground surface. Borings B-1 and B-2 were performed along the proposed sewer line alignment. Boring B-3 was performed within the vicinity of the proposed aerial crossing location. Access to boring B-4 which was originally proposed to be located on the west side of the aerial crossing was not available, therefore the boring was moved on the east side of the crossing where B-3 is located. The test boring locations were established in the field by F&R using a hand-held GPS unit. Ground surface elevations at the boring locations were obtained from the provided survey map. Given these methods of determination, the boring locations and ground surface elevations should only be considered approximate.

The soil test borings were advanced by a track-mounted drill rig using 2-1/4" inside diameter (I.D.) hollow stem augers for borehole stabilization. Representative soil samples were obtained using a standard two-inch, outside-diameter (O.D.), split-barrel sampler in general accordance with ASTM D 1586, Penetration Test and Split-Barrel Sampling of Soils (Standard Penetration Test). The number of blows required to drive the split-barrel sampler three, consecutive 6-inch increments with an automatic hammer is recorded, and the blows of the last two 6-inch increments are added to obtain the Standard Penetration Test (SPT) N-values representing the penetration resistance of the soil. SPT samples were obtained at an interval of approximately 5 feet.

A representative portion of soil was obtained from each SPT sample, sealed in a glass jar, labeled, and transported to our laboratory for classification and analysis by a geotechnical engineer. The soil samples were classified in general accordance with the Unified Soil Classification System (USCS),



using visual-manual identification procedures (ASTM D2488). A boring log for each test boring is presented in Appendix II.

Groundwater level measurements were attempted in the borings immediately upon completion of drilling. Boring B-4 was backfilled immediately after drilling completion since the boring was drilled on the last day of F&R's field activities. In the remaining borings, after a stabilization period of 24 hours following completion of drilling, groundwater readings were recorded again.

3.2 LABORATORY TESTING

F&R selected three soil samples and subjected them to geotechnical index testing consisting of natural moisture content, grain size analyses, and Atterberg Limits determinations in accordance with ASTM standards. The purpose of the index testing was to aid in our classification of the soil samples and development of engineering recommendations. The laboratory test results are included in Appendix III of this report.

In addition to the geotechnical testing, selected soil samples were subjected to analytical testing for pH, sulfides, oxidation-reduction potential, chloride, sulfate and resistivity to aid in assessing the corrosivity potential of the on-site soils. Corrosivity analysis were not completed at the time of this report preparation. These test results will be submitted under a separate a cover letter once the test results are received.

4.0 REGIONAL GEOLOGY & SUBSURFACE CONDITIONS

4.1 REGIONAL GEOLOGY

The project site is geologically located within the Coastal Plain Province of North Carolina. The Coastal Plain Province is a broad flat plain with widely spaced low rolling hills where the near surface soils have their origin from the deposition of sediments several million years ago during the period that the ocean receded from this area to its present location along the Atlantic Coast. It is noted that the Coastal Plain soils vary in thickness from only a few feet along the western border to over ten thousand feet in some areas along the coast. All of our test borings were terminated in Coastal Plain soils.

According to the Geologic Map of North Carolina (1985), the site is located within an area mapped as Cretaceous period deposits and is comprised of sedimentary deposits located within the Cape Fear Formation at the contact of Middendorf Formation. The Cape Fear Formation is mapped as Cretaceous period marine deposits that are described as sandstone and sandy mudstone, yellowish gray to bluish gray, mottled red to yellowish orange, indurated, graded and laterally continuous bedding, blocky clay, faint cross-bedding, feldspar and mica common. The Middendorf Formation is described as containing sand, sandstone, and mudstone, gray to pale gray in color with an orange cast.



4.2 SUBSURFACE CONDITIONS

4.2.1 General

The subsurface conditions discussed in the following paragraphs and those shown on the attached boring logs represent an estimate of the subsurface conditions based on an interpretation of the boring data using normally-accepted, geotechnical engineering judgments. Although individual soil test borings are representative of the subsurface conditions at the boring locations on the dates shown, they are not necessarily indicative of subsurface conditions at other locations or at other times.

Subsurface profiles have been prepared from the boring data to graphically illustrate the subsurface conditions encountered. The subsurface profiles are presented as Figure Nos. 3 and 4 in Appendix I. Strata breaks designated on the boring logs and subsurface profiles represent approximate boundaries between soil types. The transition from one soil type to another may be gradual or occur between soil samples. This section of the report provides a general discussion of subsurface conditions encountered within explored areas of the project site. More-detailed descriptions of the subsurface conditions at the individual test locations are presented on the Boring Logs provided in Appendix II.

4.2.2 Surficial Materials

Surficial Organic Soils were encountered at the surface of borings B-1 to B-4 from the ground surface to depths ranging from about 0.3 to 0.4 feet. Roots extended to depths ranging from 2 to 7 feet in the borings. The Surficial Organic Soils generally consisted of dark-colored soil material containing roots, fibrous matter, and/or other organic components, and is generally unsuitable for engineering purposes. F&R has not performed any laboratory testing to determine the organic content or other horticultural properties of the observed Surficial Organic Soil materials. Therefore, the term *Surficial Organic Soil* is not intended to indicate suitability for landscaping and/or other purposes. The Surficial Organic Soil depths provided in this report are based on driller observations and should be considered approximate. We note that the transition from Surficial Organic Soil to underlying materials may be gradual, and therefore the observation and measurement of the Surficial Organic Soil depths is subjective. Actual Surficial Organic Soil depths should be expected to vary.

4.2.3 Alluvial Soils

Alluvial soils were encountered in boring B-3 below the Surficial Organic Soils to a depth of approximately 7 feet. The alluvial soils primarily consisted of wet, very loose (SPT-N values of 4 blows-per-foot (bpf) or less) clayey sands (USCS - SC).



4.2.4 Coastal Plain Soils

Below the surficial materials or alluvial soils, the borings encountered Coastal Plain soils consisting of very loose to medium dense (SPT N-values ranging from 3 to 14 bpf) silty and clayey sands (USCS-SM & SC) and firm high plasticity sandy clays (CH) to a depth of approximately 7 feet. Below these soils, the borings encountered medium dense to very dense (SPT N-values ranging from 17 to 64 bpf) silty or clayey sands and very stiff to very hard (SPT N-values ranging from 16 to 68 bpf) low to high plasticity clayey silts and sandy clays (CL, CH and ML) to termination depths of the borings. Intermediate soil layers with SPT N-values of over 100 bpf were encountered in boring B-3 at depths ranging from 32 to 37 feet, and in boring B-4 at depths ranging from 17 to 22 feet and again from 32 to 42 feet. Highly plastic sandy clay (CH) soil layers were encountered in borings B-3 and B-4 at depths of approximately 7 to 27 feet and 2 to 7 feet, respectively.

4.3 SOIL MOISTURE AND GROUNDWATER CONDITIONS

Wet soil conditions (4 percent or greater over the estimated optimum moisture content) were encountered in borings B-1 and B-2 at a depth of approximately 2 feet and extended to depths of approximately 7 and 15 feet in borings B-2 and B-1, respectively. In borings B-3 and B-4 wet soils were encountered from the ground surface to a depth of 7 feet. Borings B-3 and B-4 encountered a wet soil layer deeper in the soil profile at depths of approximately 27 to 32 feet and 47 to 50 feet, respectively. The remaining soil samples were in a moist soil conditions (i.e., within 3 percent of the estimated optimum moisture content).

Groundwater level measurements were attempted in the borings upon completion of drilling. Immediately after drilling completion, groundwater was encountered in borings B-3 and B-4 at depths of approximately 4 and 34 feet, respectively. Boring B-4 was backfilled immediately after drilling completion since the boring was drilled on the last day of F&R's field activities. In the remaining borings, after a stabilization period of 24 hours following completion of drilling, groundwater readings were recorded again. Stabilized groundwater was encountered in borings B-1 to B-3 at depths ranging from approximately 2 to 13 feet.

It should also be noted that soil moisture and groundwater levels fluctuate depending upon seasonal factors such as precipitation and temperature. As such, soil moisture and groundwater conditions at other times may vary from those described in this report. Due to the presence of relatively impervious silty/clayey soils and very dense/hard soil layers noted on the project site, trapped or perched water conditions should be anticipated during periods of inclement weather and during seasonally wet periods.



5.0 ENGINEERING EVALUATION AND RECOMMENDATIONS

5.1 GENERAL

The conclusions and recommendations contained in this section of the report are based upon the results of the four soil test borings performed by F&R, our experience with similar projects and subsurface conditions, and the limited information provided to us regarding the proposed construction. It is our opinion that the subsurface conditions encountered at the project site are suitable for the proposed construction from a geotechnical standpoint, provided the recommendations presented in subsequent sections of this report are followed throughout the design and construction phases of this project with adequate engineering construction oversight and observation. It is our understanding that design and construction of the aerial sewer line will generally conform to the Fayetteville PWC Standard Specifications.

5.2 MANHOLE FOUNDATION AND SEWER LINE SUPPORT

A project plan with locations of the manholes and their invert elevations was not available at the time of this report preparation. F&R anticipates open-cut construction will be used to install a portion of the proposed aerial sewer line. The depths of the open-cut line are unknown since invert elevations are not known. Based on the results of the test borings, it is anticipated that if the manholes and sewer lines are installed within a depth of 10 feet of existing ground surface, they will typically extend through moist to wet, very loose to medium dense sand (SM or SC) or moist, firm to hard low to high plasticity clay soils (CL and CH). Difficult excavation materials will not likely be encountered during construction if excavation depths does not exceed a depth of 10 feet from the existing ground surface. If excavation depths exceed 10 feet from the existing ground surface then very dense/very hard material will likely be encountered during excavation. Detail excavation recommendations are provided in a different section later in this report.

Based on the results of the test borings, if the manholes and sewer lines are installed at a depth of at least 3 feet below the existing ground surface but within a depth of approximately 10 feet they will likely bear in moist to wet, very loose to medium dense sand (SM or SC) or moist, firm to hard low to high plasticity clay soils (CL and CH). Given the presence of very loose, wet soils, and shallow groundwater encountered in borings B-2 to B-4, some subgrade repair will likely be required to provide a stable base for construction of the proposed sewer line and associated manholes in the areas near these borings. If excavation depths exceed 10 feet from the existing ground surface then subgrade repair will not likely be required.

Boring B-4 encountered a firm, wet, highly plastic sandy clay (CH) soil layer from a depth of approximately 2 to 7 feet. Due to the shrink/swell potential of these soils and poor subgrade characteristics, F&R recommends that a minimum of 2 feet of separation be maintained between stable high plasticity soils and proposed subgrades. As such, unstable subgrade conditions will likely be encountered and subgrade repair will likely be required. If deemed necessary, it is



anticipated that undercut depths of approximately 2 feet below subgrade elevation would be sufficient. The undercut should be backfilled with clean washed #57 stone encased in geotextile fabric (Mirafi 140N or equivalent).

At borings B-1 to B-3 stabilized groundwater was encountered at depths ranging from approximately 2 to 13 feet below the existing ground surface. As such, depending on the anticipated invert elevations within a depth of 10 feet from the existing ground surface wet soils should be anticipated during pipe installation in these areas, and dewatering will likely be necessary. Stabilized groundwater was not measured in boring B-4 since the boring was drilled on the last day of F&R's field activities. It should be noted that the groundwater elevation at B-4 was based on a measurement obtained immediately after drilling completion and would likely have been shallower if the groundwater level was allowed to stabilize for at least 24 hours. As such, the groundwater depth indicated at B-4 could vary considerably during construction from what has been presented herein.

We recommend that a qualified geotechnical engineer or his representative evaluate all of the trench and manhole excavations and bearing grades prior to sewer line or manhole placement. If soft or otherwise unsuitable soils are encountered at the trench or manhole bearing level, undercutting and repair of the bearing grades may be required and should be performed as directed by the project geotechnical engineer. If softened/saturated soils or standing water are present at the trench bearing level, a layer of clean washed #57 stone may be recommended to provide a stable bedding for the pipe. The clean washed stone should be encased in geotextile fabric (Mirafi 140N or equivalent) in order to allow sump pumping out of the washed stone and help maintain lowered groundwater during pipe installation and backfilling operations.

5.3 AERIAL CROSSING FOUNDATIONS

Based on information provided by McKim & Creed and our site reconnaissance visit conducted on March 17, 2020, the existing aerial sewer crossing pier foundations were damaged during Hurricane Matthew and need to be replaced. The sewer line will need to cross a stream located just west of the Little Cross Creek trail by an aerial crossing. A project plan with details related to proposed construction was not available at the time of this report preparation.

The exact location of the proposed aerial sewer line has not been determined. F&R was provided three possible alignments of the proposed aerial crossing by McKim & Creed as shown in Figure No. 2B. Borings B-3 and B-4 were performed at the east side of the stream near the proposed aerial crossing alignments. Access to the west side of the stream was not available, therefore, a soil boring was not performed on that side and our analysis was performed using the soil information obtained from borings B-3 and B-4.

F&R recommends that driven piles be used for support of the aerial crossing. Based on our email conversation with McKim & Creed structural engineer, we understand each of the supports will consist of a steel beam header with one or two, HP 8x36 steel piles. The piles will be installed



based upon PWC's Standard Drawing M.13: *H-Pile Detail 4" through 16" Pipe for Aerial Crossings*. If the two pile system is chosen to be installed the centerline distance between the two piles should be greater than approximately 3 pile diameters to avoid reduction in capacity.

The design axial pier load provided by McKim & Creed is about 8 kips per pier. The piles are required to be driven to an ultimate bearing capacity of three times the design load or 24 kips per pile (12 tons). The piles should primarily achieve the required capacity through skin friction. Axial capacity calculations performed using the computer program "APILE" indicate that adequate ultimate resistance should be available for an HP 8x36 steel pile driven an estimated 18 feet below the bottom of the steel beam header.

Information regarding the proposed pile driving hammer was not available since this project has not yet been awarded to a contractor. The project geotechnical engineer should review the hammer(s) proposed to be used by the contractor and preliminarily confirm that the selected hammer may be able to drive the piles to the design load without damage to the pile. We will be happy to assist the contractor by performing a wave equation analysis (WEAP) analysis and develop the driving criteria once the pile hammer has been selected.

F&R conducted a preliminary wave equation (WEAP) analysis, which indicated that a pile driving hammer with a rated energy of less than about 5,000 lbs-ft per blow should be able to drive the piles to the required resistance within an acceptable range of blows and without overstressing the pile. The required driving resistance was calculated using a factor of safety of 3.0, resulting in a required driving resistance of 24 kips per pile. When the piles have reached the design capacity based on the driving criteria at the anticipated depths driving operations should be stopped to prevent damaging the pile. If the piles have not reached design capacity based on the driving criteria, restriking/redriving of the piles is typically performed a day or more later in order to allow the pile to develop additional resistance as the pore water pressures dissipate. Care should be implemented during handling and driving operations to prevent damage to the pile. Proper pile alignment should be checked by the contractor prior to, and intermittently during, the driving of each pile.

F&R performed a lateral load analysis using the computer program LPILE. The analysis was based on an unsupported length of 7 feet and maximum lateral deflection of 1-inch as requested by McKim & Creed. Our analysis used estimated soil parameters based on the subsurface conditions encountered in borings B-3 and B-4. A vertical pile was modeled utilizing 4 kips of transverse shear, 1 kip longitudinal shear, and an axial load of 8 kips. Lateral capacity calculations indicate that adequate lateral resistance should be available for an HP 8x36 steel pile driven a minimum of 19 feet below the bottom of the steel beam cap.

An estimated pile length of 18 feet is needed to satisfy the required axial capacity, and a minimum pile length of 19 feet is needed to satisfy the required lateral capacity. Therefore, the minimum pile length is estimated to be 19 feet.



Scour has not been included in development of these pile recommendations as requested by McKim & Creed.

We recommend that the following notes be placed on the structure drawings:

1. The allowable bearing capacity for piles is 4 tons per pile.
2. Drive piles to a required bearing capacity of 12 tons per pile. The required bearing capacity is equal to the allowable bearing capacity with a minimum factor of safety of three.
3. Install piles to a minimum depth of 19 feet.
4. It has been estimated that a hammer with an equivalent rated energy less than about 5,000 ft-lbs per blow will be required to drive piles.

5.4 DEWATERING

As previously mentioned, stabilized groundwater was encountered in borings B-1 to B-3 approximately 2 to 13 feet below the existing ground surface. As such, depending on the proposed invert elevations (anticipated excavation depths within 10 feet of the existing ground surface) wet soils and groundwater may be encountered during pipe installation at the project site, and dewatering will likely be necessary. Stabilized groundwater was not measured in boring B-4 since the boring was drilled on the last day of F&R's field activities. It should be noted that the groundwater elevation at B-4 was based on a measurement obtained immediately after drilling completion and would likely have been shallower if the groundwater level was allowed to stabilize for at least 24 hours. As such, the groundwater depth indicated at B-4 could vary considerably during construction from what has been presented herein.

Therefore, it is anticipated that groundwater will likely be encountered during sewer construction, and dewatering will likely be required in order to maintain drained, stable excavations and to prevent softening/loosening of the excavation subgrades. The groundwater should be lowered to a depth of at least 3 to 4 feet below the bottoms of the excavations. However, groundwater elevations will likely vary throughout the year, and will be elevated especially during the seasonally-wet months (October through April). If groundwater is encountered, dewatering may be able to be handled by sump and pumping techniques. However during periods of inclement weather, sump pits and pumping may not be sufficient to control both groundwater and surface water, and more extensive drainage/dewatering measures may be required. The method of surface water and groundwater control should be determined and designed by the contractor, but may require well points, creek diversion, coffer dams, sheet piling, or other means.

It should be noted that if groundwater levels are not effectively maintained below the base of the excavations during construction, unstable and loosened subgrade conditions could develop, which may cause excessive settlements to develop beneath the completed structures or require additional subgrade repair (*e.g.*, densification, undercutting & replacement with washed stone,



etc.). Therefore, efforts should be incorporated in the construction sequence to properly control groundwater levels during construction. Additionally, it is recommended that only excavation contractors experienced in similar excavations and groundwater control should be allowed to perform this work.

5.5 EXCAVATION CHARACTERISTICS

Based on anticipated excavation depths less than 10 feet from the existing ground surface and our test boring results, difficult excavation will not be required at this site. We anticipate that the open-cut excavations can be excavated using conventional backhoes, tracked excavators, and boring machines. The soils within a depth of 10 feet of the ground surface consisted of very loose to medium dense sands and firm to hard clays.

If excavation depths exceed 10 feet from the existing ground surface very dense/very hard material will likely be encountered. Removal of these materials from confined excavations (e.g., utility excavations) may be able to be accomplished using a large track hoe (e.g., CAT 330 with new rock teeth). The speed and ease of hard excavation will depend upon the equipment utilized, experience of the equipment operators.

5.6 STRUCTURAL FILL PLACEMENT AND COMPACTION

It is expected that the low-plasticity on-site cut soils (USCS - SM, SC & CL) will be suitable for use as structural fill/backfill material provided they are at a moisture content suitable to achieve proper compaction and are stable during compaction and at final subgrade. These low to moderately plastic soils are generally considered fair to good materials for use as structural earth fill. However, as previously indicated, some of these soils that may be excavated during utility construction will likely be wet. Depending upon the cut depths and site conditions at the time of construction, these soils may require moisture conditioning (e.g., drying of wet soils) prior to use as structural fill. As such, it is recommended that earthwork be performed during the summer months when the weather conditions are more conducive to moisture conditioning of fill materials. If earthwork is performed during the seasonally-wet months, additional subgrade undercutting and repair will likely be required and it may be difficult to properly compact structural fill.

Highly plastic clays (CH) were encountered in borings B-3 and B-4 in the upper 10 feet of the soil profile. These soils are considered poor materials for re-use as structural fill/backfill because they can become unstable and be difficult to properly place and compact.

If it is necessary to import soils to the site, F&R recommends that a qualified geotechnical engineer or engineering technician working under the direction of the geotechnical engineer approve the suitability of the imported soils prior to their delivery to the site. Imported structural fill should consist of low plasticity soil ($LL < 35$, $PI < 20$), have a maximum dry density of at least 100 pcf, and be free of organic and other deleterious materials.



All structural earth fill should be compacted at a moisture content within ± 3 percent of the optimum moisture content and placed in loose lifts not exceeding 8 inches. All structural earth fill should be compacted to at least 95 percent of the Standard Proctor maximum dry density as determined by ASTM D-698 and 100 percent in the top 12 inches. Structural earth fill placed in non-structural/grassy areas should be compacted to at least 92 percent of the standard Proctor maximum dry density.

All structural fill material should be placed and compacted under the full-time control and supervision of a qualified geotechnical engineer or engineering technician working under the direction of the geotechnical engineer. The placement and compaction of all fill material should be tested at frequent intervals in order to confirm that the recommended degree of compaction is achieved.

As previously stated, the on-site soils have sufficient silt/clay content to render them moisture sensitive. The on-site soils will become unstable (*i.e.*, pump and rut) during normal construction activities when in the presence of excess moisture. Soils with a moisture content greater than three percent above the optimum moisture content are generally considered to have excessive moisture. During earthwork and construction activities, surface-water runoff must be drained away from construction areas to prevent water from ponding on or saturating the soils within excavations or on subgrades.

Exposure to the environment may weaken the soils at the bearing level if excavations remain open for long periods of time. The bearing surfaces should be level or suitably-benched and free of loose soil, ponded water, and debris. If the bearing soils are softened by surface water intrusion, subsurface seepage or exposure, the softened soils should be removed from the excavation immediately prior to placement of stone, concrete, or other pipe bedding materials.

5.7 TEMPORARY EXCAVATION RECOMMENDATIONS

Mass excavations and other excavations, such as for utility installation, required for construction of this project must be performed in accordance with the United States Department of Labor, Occupational Safety and Health Administration (OSHA) guidelines (29 CFR 1926, Subpart P, Excavations) or other applicable jurisdictional codes for permissible temporary side-slope ratios and/or shoring requirements. The OSHA guidelines require daily inspection of excavations, adjacent areas and protective systems by a “competent person” for evidence of situations that could result in cave-ins, indications of failure of a protective system, or other hazardous conditions. All excavated soils, equipment, building supplies, etc., should be placed away from the edges of the excavation at a distance equaling or exceeding the depth of the excavation.



6.0 CONTINUATION OF SERVICES

It is recommended that site preparation; subgrade evaluation; structural fill placement and compaction; and aerial crossing foundation construction be monitored by the geotechnical engineer of record or engineering technician working under the supervision of the geotechnical engineer. A qualified soils technician should monitor fill placement and perform density tests on each lift of compacted fill and at final subgrades to verify that adequate compaction is being achieved. It should be noted that the actual soil conditions will vary across this site and thus the presence of the geotechnical engineer of record and/or his representative during construction will serve to validate the subsurface conditions and recommendations presented in this report.

We recommend that F&R be employed to monitor the earthwork and foundation construction, and to report that the recommendations contained in this report are completed in a satisfactory manner. Our continued involvement on the project will aid in the proper implementation of the recommendations discussed herein.

7.0 LIMITATIONS

This report has been prepared for the exclusive use of McKim & Creed and/or their agents, for specific application to the referenced project in accordance with generally-accepted soil and foundation engineering practices. No other warranty, express or implied, is made. Our evaluations and recommendations are based on design information furnished to us, the data obtained from the subsurface exploration program, and generally-accepted geotechnical engineering practices. The evaluations and recommendations do not reflect variations in subsurface conditions which could exist intermediate of the boring locations or in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our recommendations based upon our on-site observations of the conditions.

There are important limitations to this and all geotechnical studies. Some of these limitations are discussed in the information prepared by GBA, which is included in Appendix IV. We ask that you please review this information.

Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers should evaluate earthwork activities to observe that the conditions anticipated in design actually exist. Otherwise, we assume no responsibility for construction compliance with the design concepts, specifications, or recommendations.

In the event that changes are made in the proposed construction, the recommendations presented in the report shall not be considered valid unless the changes are reviewed by our firm and conclusions of this report modified and/or verified in writing. If this report is copied or transmitted

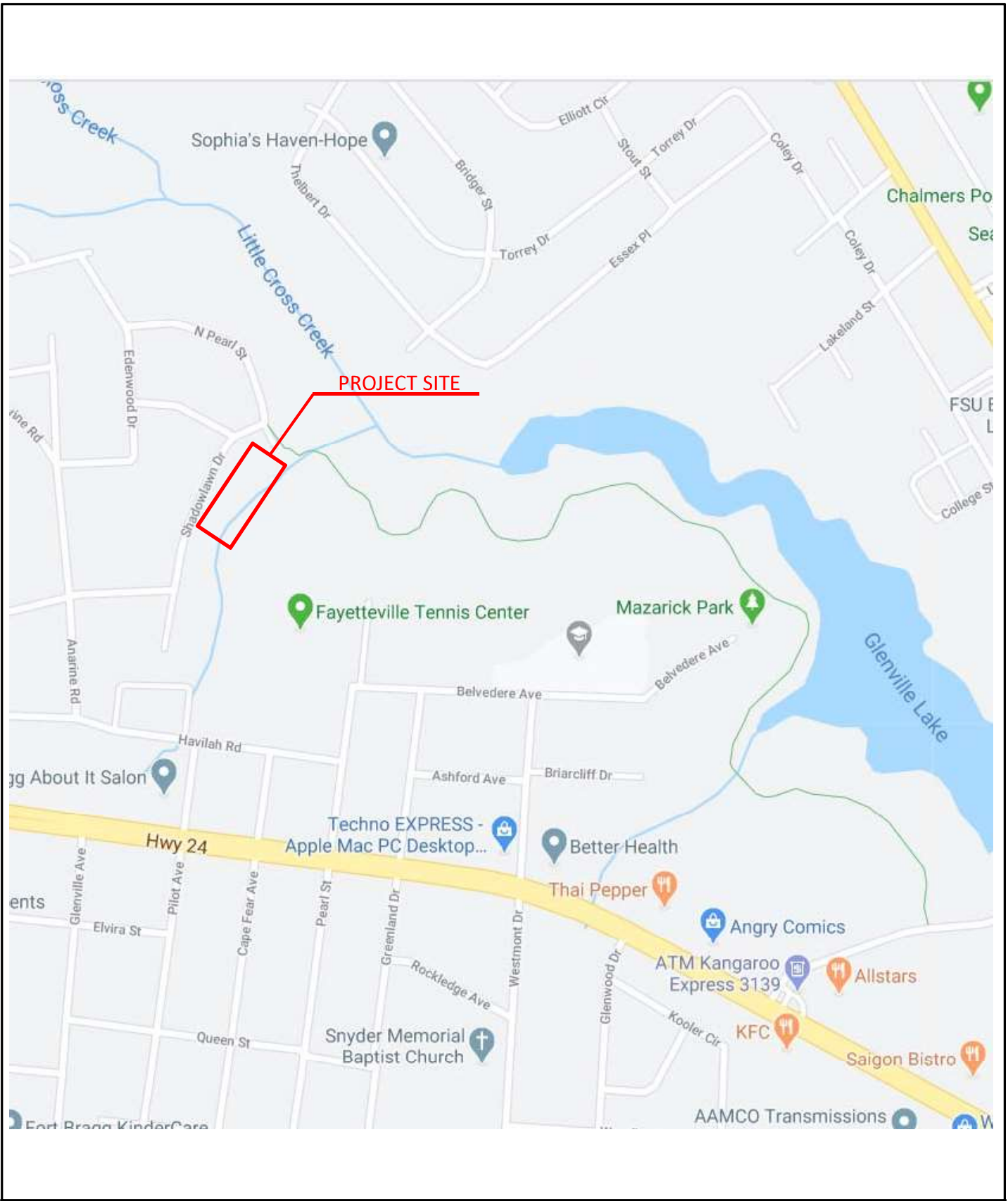


to a third party, it must be copied or transmitted in its entirety, including text, attachments, and enclosures. Interpretations based on only a part of this report may not be valid.




APPENDIX I

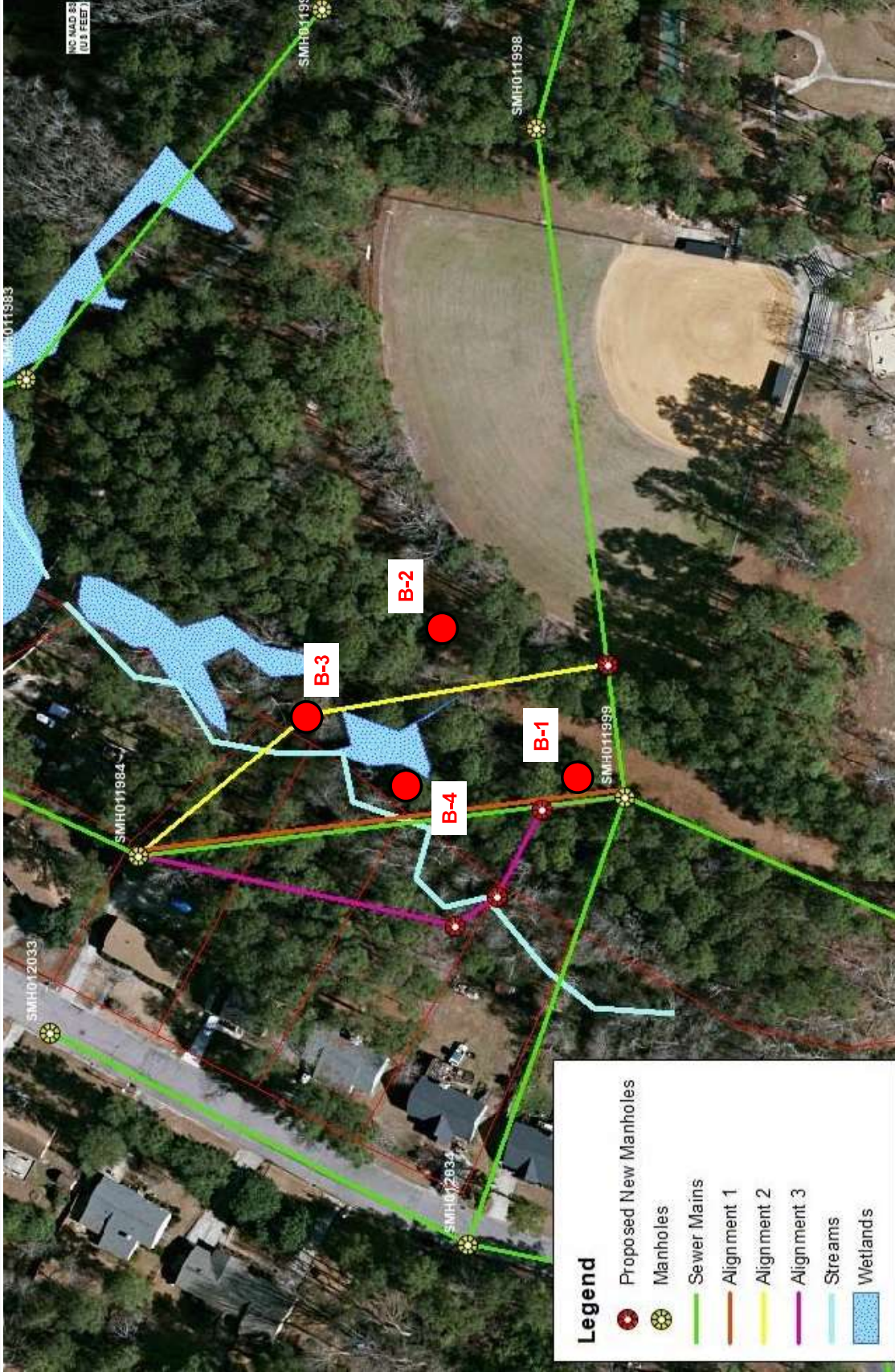
FIGURES



SITE VICINITY MAP

North ▲

 <p>FROEHLING & ROBERTSON, INC. <i>Engineering Stability Since 1881</i> 310 Hubert Street Raleigh, North Carolina 27603-2302 USA T 919.828.3441 F 919.828.5751 www.fandr.com</p>	CLIENT: McKim & Creed		<p>FIGURE No.: 1</p>
	PROJECT: Shadowlawn Aerial Crossing		
	LOCATION: Fayetteville, NC		
	F&R PROJECT No.: 66Y-0029		
	DRAWN BY: M. Kayser, P.E.		
DATE: May 2020	SCALE: Not to Scale		



Legend

- Proposed New Manholes
- Manholes
- Sewer Mains
- Alignment 1
- Alignment 2
- Alignment 3
- Streams
- Wetlands



BORING LOCATION PLAN	
CLIENT: McKim & Creed	
PROJECT: Shadowlawn Aerial Crossing Replacement	
LOCATION: Fayetteville, North Carolina	
F&R PROJECT No.: 66Y-0029	
DRAWN BY: M. Kayser, P.E.	CHECKED BY: M. S. Sabodish, P.E.
DATE: May 2020	SCALE: Not to scale

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SINCE 1881

Approximate Boring Location




Approximate Boring Location



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BORING LOCATION PLAN



CLIENT: McKim & Creed	
PROJECT: Shadowlawn Aerial Crossing Replacement	
LOCATION: Fayetteville, North Carolina	
F&R PROJECT No.: 66Y-0029	
DRAWN BY: M. Kayser, P.E.	CHECKED BY: M. S. Sabodish, P.E.
DATE: May 2020	SCALE: As Shown

FIGURE 2B
No.:

SINCE



1881

FROEHLING & ROBERTSON, INC.

SUBSURFACE PROFILE

Plot Based on Elevation

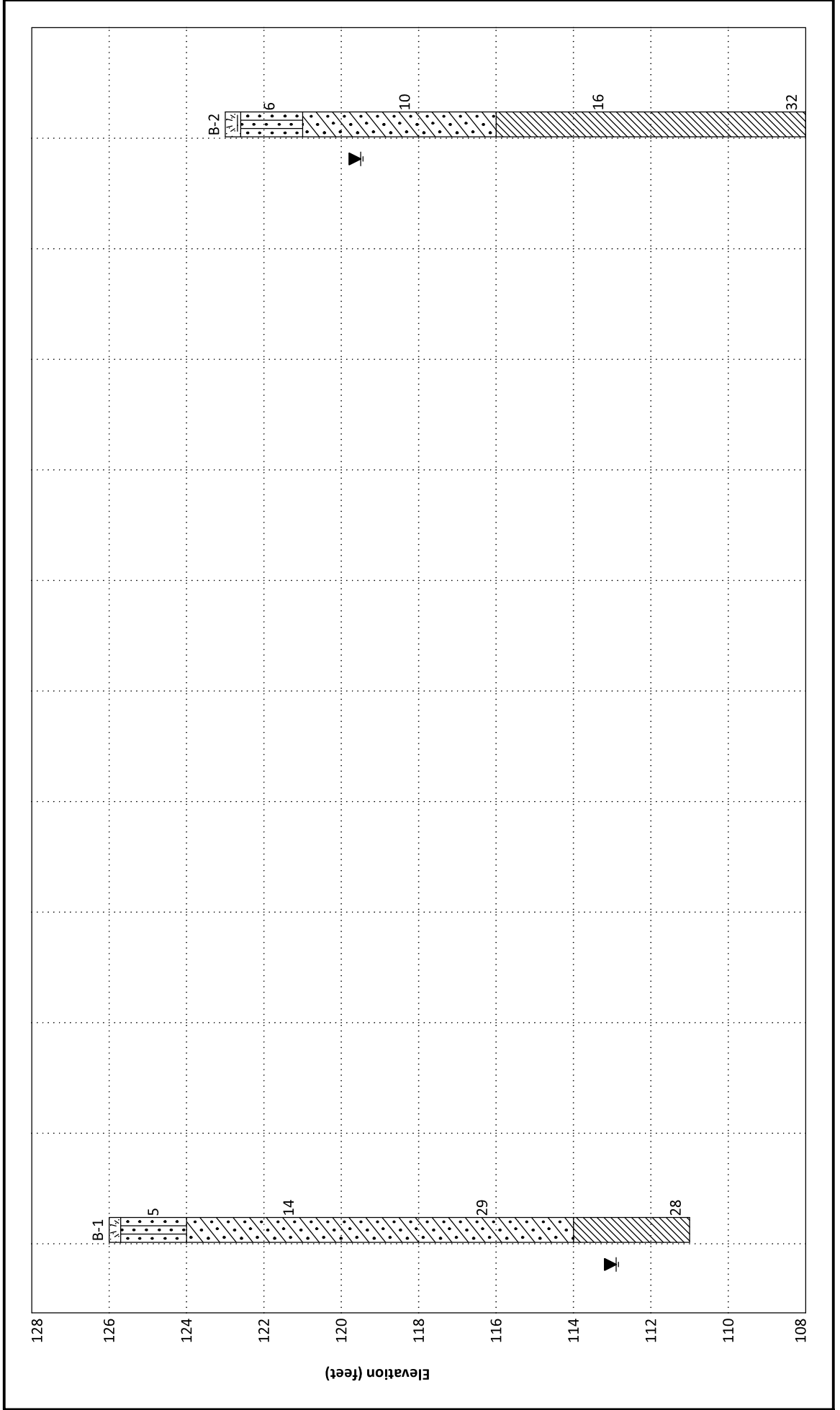
Profile Name: Figure No. 3

Project No: 66Y-0029

Client: McKim & Creed

Project: FAYPWC Shadowlawn Aerial Crossing

City/State: Fayetteville, NC





FROEHLING & ROBERTSON, INC.

SUBSURFACE PROFILE

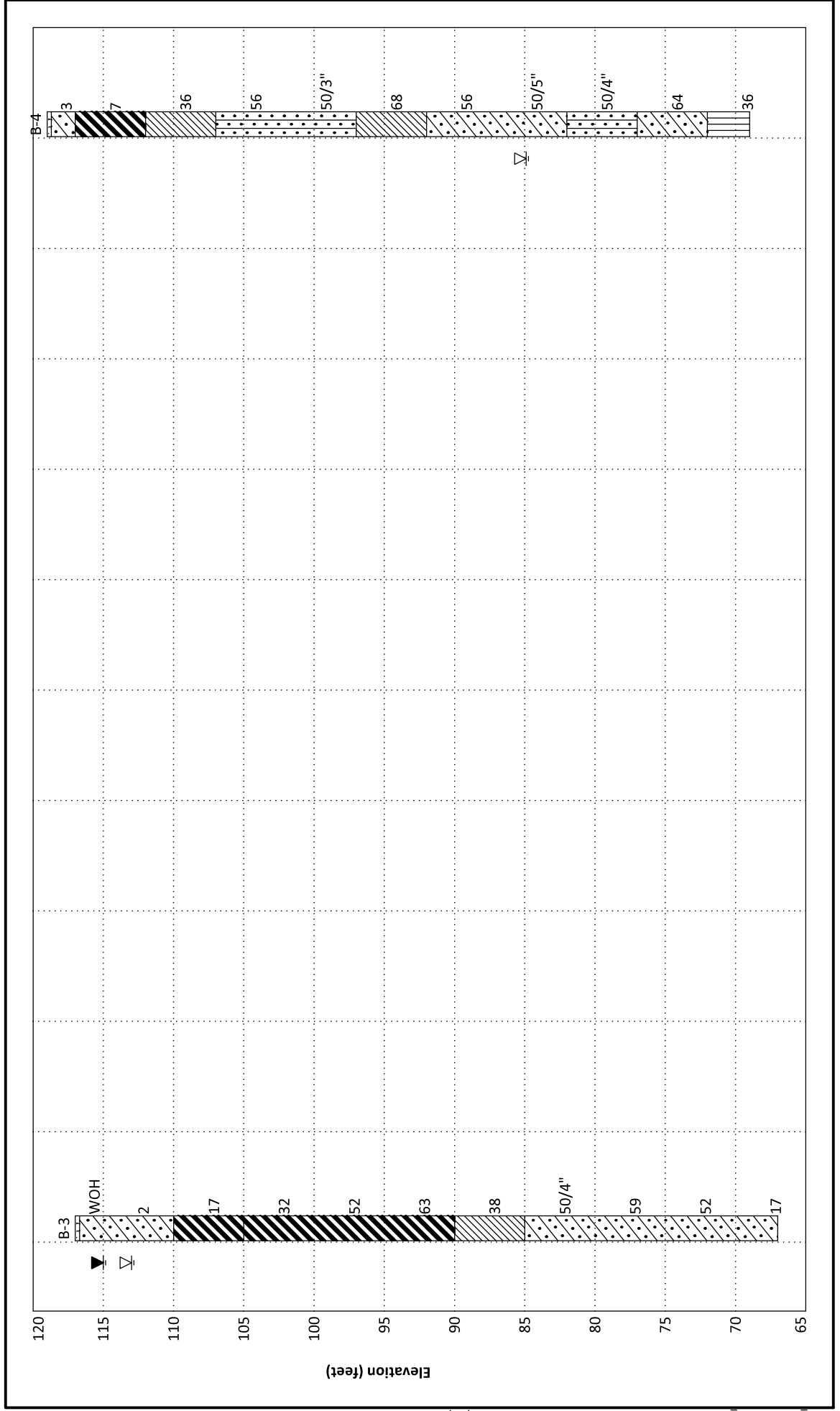
Plot Based on Elevation
Profile Name: Figure No. 4

Project No: 66Y-0029

Client: McKim & Creed

Project: FAYPWC Shadowlawn Aerial Crossing

City/State: Fayetteville, NC





APPENDIX II

BORING LOGS

KEY TO SOIL CLASSIFICATION

Correlation of Penetration Resistance with Relative Density and Consistency

<u>Sands and Gravels</u>		<u>Silts and Clays</u>	
<u>No. of Blows, N</u>	<u>Relative Density</u>	<u>No. of Blows, N</u>	<u>Relative Density</u>
0 - 4	Very loose	0 - 2	Very soft
5 - 10	Loose	3 - 4	Soft
11 - 30	Medium dense	5 - 8	Firm
31 - 50	Dense	9 - 15	Stiff
Over 50	Very dense	16 - 30	Very stiff
		31 - 50	Hard
		Over 50	Very hard

Particle Size Identification (Unified Classification System)

Boulders:	Diameter exceeds 8 inches
Cobbles:	3 to 8 inches diameter
Gravel:	Coarse - 3/4 to 3 inches diameter Fine - 4.76 mm to 3/4 inch diameter
Sand:	Coarse - 2.0 mm to 4.76 mm diameter Medium - 0.42 mm to 2.0 mm diameter Fine - 0.074 mm to 0.42 mm diameter
Silt and Clay:	Less than 0.07 mm (particles cannot be seen with naked eye)

Modifiers

The modifiers provide our estimate of the amount of silt, clay or sand size particles in the soil sample.

<u>Approximate Content</u>	<u>Modifiers</u>
≤ 5%:	Trace
5% to 12%:	Slightly silty, slightly clayey, slightly sandy
12% to 30%:	Silty, clayey, sandy
30% to 50%:	Very silty, very clayey, very sandy

<u>Field Moisture Description</u>	
Saturated:	Usually liquid; very wet, usually from below the groundwater table
Wet:	Semisolid; requires drying to attain optimum moisture
Moist:	Solid; at or near optimum moisture
Dry:	Requires additional water to attain optimum moisture



UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

<i>MAJOR DIVISION</i>				<i>TYPICAL NAMES</i>	
<i>GRAVELS</i> More than 50% of coarse fraction larger than No. 4 sieve	<i>CLEAN GRAVEL</i> (little or no fines)		GW	Well graded gravels	
			GP	Poorly graded gravels	
	<i>GRAVELS with fines</i>			GM	Silty gravels
				GC	Clayey gravels
	<i>SANDS</i> More than 50% of coarse fraction smaller than No. 4 sieve	<i>CLEAN SAND</i> (little or no fines)		SW	Well graded sands
				SP	Poorly graded sands
<i>SAND with fines</i>				SM	Silty sands, sand/silt mixtures
				SC	Clayey sands, sand/clay mixtures
<i>SILTS AND CLAYS</i> Liquid Limit is less than 50			ML	Inorganic silts, sandy and clayey silts with slightly plasticity	
			CL	Sandy or silty clays of low to medium plasticity	
			OL	Organic silts of low plasticity	
<i>SILTS AND CLAYS</i> Liquid Limit is greater than 50			MH	Inorganic silts, sandy micaceous or clayey elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity	
<i>HIGHLY ORGANIC SOILS</i>			PT	Peat and other highly organic soils	
<i>MISCELLANEOUS MATERIALS</i>				PWR (Partially Weathered Rock)	
				Rock	
				Asphalt	
				ABC Stone	
				Concrete	
				Surficial Organic Soil	



Project No: 66Y-0029

Elevation: 126 ±

Drilling Method: 2.25" ID HSA

Client: McKim & Creed

Total Depth: 15.0'

Hammer Type: Automatic

Project: FAYPWC Shadowlawn Aerial Crossing

Boring Location: See Boring Location Plan

Date Drilled: 4/16/20

City/State: Fayetteville, NC

Driller: F&R Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
125.7	0.3	SURFICIAL ORGANIC SOILS COASTAL PLAIN: Loose, Brown, Moist, Very Silty Fine to Medium SAND (SM) with Trace Roots	2-2-3	0.0	5	GROUNDWATER DATA: 0 Hr: Dry, Caved at 13.3' 24 Hrs: 13.1', Caved at 13.5'
124.0	2.0			1.5		
		Medium Dense, Gray-Brown to Gray, Wet, Silty Clayey Fine to Medium SAND (SC)	4-5-9	3.5	14	
				5.0		
				8.5		
				10.0		
114.0	12.0	Very Stiff, Gray, Wet, Fine Sandy Silty CLAY (CL)	7-12-17	8.5	29	
				10.0		
			8-11-17	13.5	28	
				15.0		
111.0	15.0	Boring Terminated at 15 feet.				

BORING_LOG_66Y-0029 BORING LOGS.GPJ F&R.GDT 5/21/20

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



Project No: 66Y-0029

Elevation: 123 ±

Drilling Method: 2.25" ID HSA

Client: McKim & Creed

Total Depth: 15.0'

Hammer Type: Automatic

Project: FAYPWC Shadowlawn Aerial Crossing

Boring Location: See Boring Location Plan

Date Drilled: 4/16/20

City/State: Fayetteville, NC

Driller: F&R Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
122.6	0.4	SURFICIAL ORGANIC SOILS	1-3-3	0.0	6	GROUNDWATER DATA: 0 Hr: Dry inside Temporary Observation Well 24 Hrs: 3.5' inside Temporary Observation Well
121.0	2.0	COASTAL PLAIN: Loose, Gray, Moist, Slightly Clayey Silty Fine to Medium SAND (SM) with Trace Roots		1.5		
		Loose, Gray-Brown, Wet, Silty Clayey Fine to Medium SAND (SC) with Trace Roots and Fine Gravel	5-5-5	3.5	10	
				5.0		
116.0	7.0	Very Stiff to Hard, Gray to Gray-Maroon, Moist, Fine Sandy Silty CLAY (CL)		8.5	16	
			4-7-9	10.0		
			8-14-18	13.5		32
108.0	15.0	Boring Terminated at 15 feet.		15.0		

BORING_LOG_66Y-0029 BORING LOGS.GPJ F&R.GDT 5/21/20

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



Project No: 66Y-0029

Elevation: 117 ±

Drilling Method: 2.25" ID HSA

Client: McKim & Creed

Total Depth: 50.0'

Hammer Type: Automatic

Project: FAYPWC Shadowlawn Aerial Crossing

Boring Location: See Boring Location Plan

Date Drilled: 4/16/20

City/State: Fayetteville, NC

Driller: F&R Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
116.7	0.3	SURFICIAL ORGANIC SOILS	1-1-WOH	0.0	1	GROUNDWATER DATA: 0 Hr: 4.0' inside Temporary Observation Well 24 Hrs: 2.0' inside Temporary Observation Well
		ALLUVIAL: Very Loose, Dark Gray, Wet, Silty Clayey Fine to Coarse SAND (SC) with Trace Roots and Fine Gravel (0.0-1.5')		1.5		
			1-1-1	3.5	2	
				5.0		
110.0	7.0	COASTAL PLAIN: Very Stiff, Gray, Moist, Silty CLAY (CH)		8.5	17	
			4-6-11	10.0		
105.0	12.0	Hard to Very Hard, Gray, Moist, Silty CLAY (CH)		13.5	32	
			8-15-17	15.0		
				18.5	52	
			7-20-32	20.0		
				23.5	63	
			18-27-36	25.0		

BORING_LOG_66Y-0029 BORING LOGS.GPJ F&R.GDT 5/21/20

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



Project No: 66Y-0029

Elevation: 117 ±

Drilling Method: 2.25" ID HSA

Client: McKim & Creed

Total Depth: 50.0'

Hammer Type: Automatic

Project: FAYPWC Shadowlawn Aerial Crossing

Boring Location: See Boring Location Plan

Date Drilled: 4/16/20

City/State: Fayetteville, NC

Driller: F&R Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
90.0	27.0	Hard, Gray, Wet, Fine Sandy Silty CLAY (CL) with Trace Mica			38	
			18-11-27	28.5		
				30.0		
85.0	32.0	Medium Dense to Very Dense, Gray, Moist, Silty Clayey Fine to Coarse SAND (SC) with Trace Mica			100+	
			24-24-50/4"	33.5		
				34.8		
				38.5		
			16-27-32	40.0		
				43.5		
			45.0			
			11-21-31	48.5	52	
			7-8-9	48.5	17	
67.0	50.0	Boring Terminated at 50 feet.			50.0	

BORING_LOG_66Y-0029 BORING LOGS.GPJ F&R.GDT 5/21/20

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



Project No: 66Y-0029

Elevation: 119 ±

Drilling Method: 2.25" ID HSA

Client: McKim & Creed

Total Depth: 50.0'

Hammer Type: Automatic

Project: FAYPWC Shadowlawn Aerial Crossing

Boring Location: See Boring Location Plan

Date Drilled: 4/17/20

City/State: Fayetteville, NC

Driller: F&R Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
118.7	0.3	SURFICIAL ORGANIC SOILS	1-1-2	0.0	3	GROUNDWATER DATA: 0 Hr: 34.1'
		COASTAL PLAIN: Very Loose, Brown, Wet, Silty Clayey Fine to Medium SAND (SC) with Trace Roots		1.5		
117.0	2.0	Firm, Brown-Gray, Wet, Silty CLAY (CH) with Trace Roots	2-3-4	3.5	7	
				5.0		
112.0	7.0	Hard, Gray, Moist, Fine Sandy Silty CLAY (CL)		8.5	36	
			10-12-24	10.0		
				12.0		
107.0	12.0	Very Dense, Gray, Moist, Clayey Silty Fine to Medium SAND (SM)		13.5	56	
			12-30-26	15.0		
			17-44-50/3"	18.5		
				19.8		
97.0	22.0	Very Hard, Gray, Moist, Fine Sandy Silty CLAY (CL)		23.5	68	
			9-23-45	25.0		

BORING LOG 66Y-0029 BORING LOGS.GPJ F&R.GDT 5/21/20

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



Project No: 66Y-0029

Elevation: 119 ±

Drilling Method: 2.25" ID HSA

Client: McKim & Creed

Total Depth: 50.0'

Hammer Type: Automatic

Project: FAYPWC Shadowlawn Aerial Crossing

Boring Location: See Boring Location Plan

Date Drilled: 4/17/20

City/State: Fayetteville, NC

Driller: F&R Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
92.0	27.0	Very Dense, Gray, Moist, Silty Clayey Fine to Medium SAND (SC)				
			20-22-34	28.5	56	
					30.0	
			30-38-50/5"	33.5	100+	
					34.9	
82.0	37.0	Very Dense, Gray, Moist, Slightly Clayey Very Silty Fine SAND (SM) with Trace Mica				
			14-25-50/4"	38.5	100+	
				39.8		
77.0	42.0	Very Dense, Gray, Moist, Silty Clayey Fine to Medium SAND (SC) with Trace Mica				
			15-26-38	43.5	64	
				45.0		
72.0	47.0	Hard, Gray, Wet, Fine Sandy Clayey SILT (ML) with Trace Mica				
			8-10-26	48.5	36	
69.0	50.0	Boring Terminated at 50 feet.			50.0	

BORING_LOG_66Y-0029 BORING LOGS.GPJ F&R.GDT 5/21/20

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.



APPENDIX III

LABORATORY TEST RESULTS

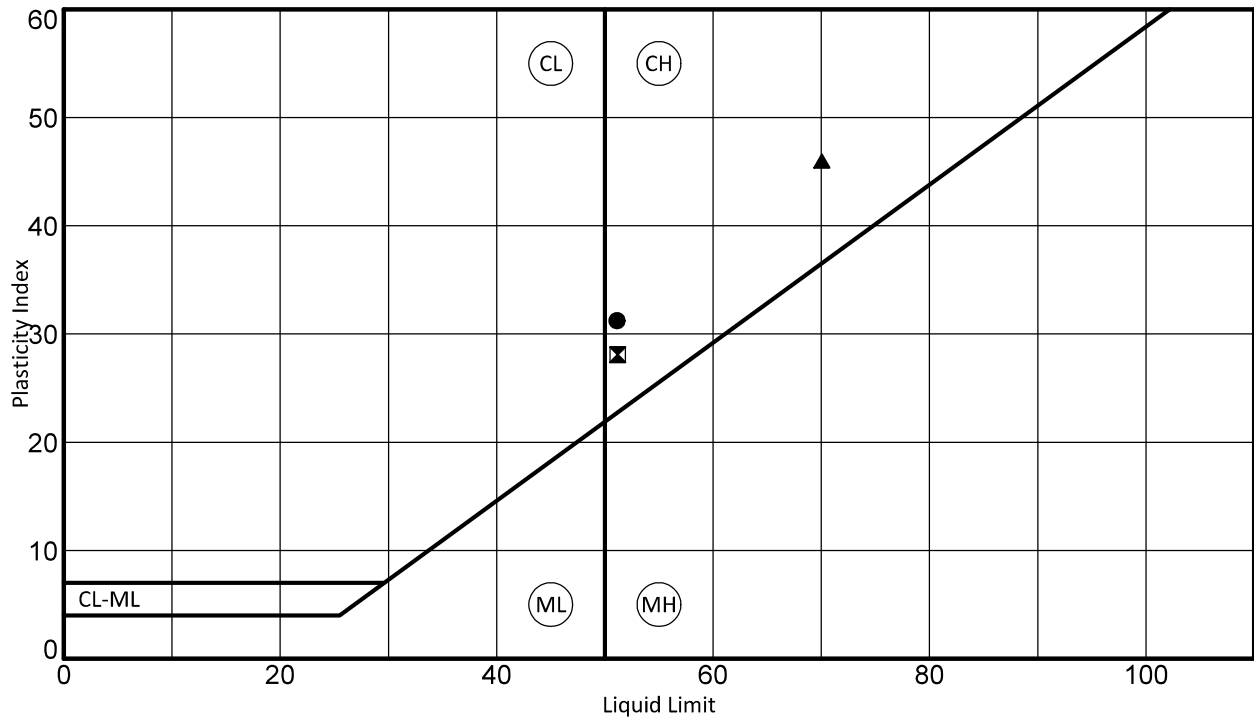


Project No: 66Y-0029

Client: McKim & Creed

Project: FAYPWC Shadowlawn Aerial Crossing

City/State: Fayetteville, North Carolina



Boring No.	Depth	LL	PL	PI	Fines	Classification	% Natural Water Content
● B-3	8.5' - 10.0'	51	20	31	99.5	SILTY CLAY (CH)	21.7
⊠ B-3	13.5' - 15.0'	51	23	28	89.1	SILTY CLAY (CH)	21.7
▲ B-4	3.5' - 5.0'	70	24	46	92.4	SILTY CLAY (CH)	31.4



APPENDIX IV
GBA DOCUMENT

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



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A Minority-Owned Business

APPENDIX C

ENVIRONMENTAL REPORT



310 Hubert Street
Raleigh, North Carolina 27603-2302
T 919.828.3441

May 26, 2020

Ms. Nisha Thuruthy, PE, PMP
McKim and Creed
1730 Varsity Drive
Venture IV Building, Suite 500
Raleigh, North Carolina 27606
nthuruthy@mckimcreed.com

Re: **Wetland and Stream Delineation**
Shadowlawn Aerial Crossing Replacement
Shadowlawn Drive
Fayetteville, North Carolina 28303
F&R Project No. 59Y-0127

Property Description:

Size (acres): 10.6 acres Nearest Town: Fayetteville, NC
Nearest Waterway: Little Cross Creek River Basin: Cape Fear
USGS HUC: 030300040704 Coordinates: Lat 35.072578 / Long -78.908622
Location: Located just east of the intersection of Shadowlawn Drive and North Pearl Street, and just north of the terminus of Mazarick Park Drive in Fayetteville, Cumberland County, NC. Includes portions of Mazarick Memorial Park.

Ms. Thuruthy,

Froehling & Robertson, Inc., (F&R) presents herein the results of the stream and wetland delineation conducted at the Shadowlawn Aerial Crossing Site. The project site is located just east of the intersection of Shadowlawn Drive and North Pearl Street in Fayetteville, North Carolina and includes a portion of Mazarick Memorial Park. The project site totals approximately 10.6 acres and consists of existing sewer and water line easements, residential properties, a portion of a recreational park, and wooded land (see Attachments for Site Location Map).

EXECUTIVE SUMMARY

The following is a summary of our findings and is not intended to replace more detailed information contained elsewhere in this report. Based on F&R's field observations and information review, three likely jurisdictional wetlands (W1, W2, and W3), and one likely jurisdictional stream (S1) were identified and delineated within the review area during our assessment. Feature S1 and a portion of W3 are mapped on the associated USGS topographic map. Feature S1 is also mapped on the published NRCS Soil Survey. A graphic depiction of the identified feature locations is included in the attachments.



SCOPE OF SERVICES

This report describes the activities and findings associated with the completion of a stream and wetland assessment for the above-referenced review area. F&R reviewed applicable information sources to identify areas on the project site that could be considered “Waters of the US” (*i.e.*, wetland, stream, and open water features) and subject to jurisdiction by Environmental Protection Agency (EPA), United States Army Corps of Engineers (USACE) and/or North Carolina Division of Water Resources (NCDWR). On-site identification of wetlands was performed in general accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and subsequent USACE clarification memorandums. On-site identification of streams was performed in general accordance with the NCDWR Identification Methods of the Origins of Intermittent and Perennial Streams.

SITE CONDITIONS

Information Review

F&R reviewed all or some of the following resources prior to visiting the project site: United States Geological Survey (USGS) current 1:24,000-scale topographic map, Natural Resource Conservation Service (NRCS) Soil Survey, National Wetland Inventory (NWI), and aerial photographs. Based on F&R’s information review, one stream feature (S1) was depicted on the NRCS Soil Survey Map within the assessment area. Feature S1 and the northeast portion of W3 were depicted on the USGS Topographical Map and the NWI Map. Two wetlands (W1 and W2) were not depicted in reviewed resources, including NWI Maps, NRCS Soil Survey Maps, and USGS Topographical Maps, but were observed in the field and are likely to be considered jurisdictional.

Additionally, the NRCS Soil Survey maps indicate three soil series within the project review area: Gilead loamy sand (GdD), Johnston loam (JT), and Vacluse loamy sand (VaD). Two soils (GdD and VaD) mapped within the project area are not considered to be hydric. One soil (JT) is considered to be hydric. Hydric soils are defined as “soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.” The presence of hydric soils is one of three wetland delineation criteria.

On-Site Observations

The review area currently consists of sewer and water line easements, residential properties, a portion of a recreational park, and wooded land. Three likely jurisdictional wetlands (W1, W2, and W3), and a likely jurisdictional stream (S1) were identified and delineated within the review area during our assessment.

Based on F&R’s on-site observations, the above-listed features are each likely to be considered jurisdictional “Waters of the US” by the USACE and/or NCDWR; however, on-site determinations by the USACE and NCDWR will be required in order to confirm or deny jurisdiction by these two regulatory agencies. The approximate locations of the mapped surface features are shown on the Wetlands Identification Map in the Attachments and are described as follows:

- **Wetland 1** – located on the west-central portion of the review area, this wetland feature is located within the floodplain of S1 and is fed by surficial runoff and bankfull events. Generally this feature flows into stream channel S1 to the northwest. W1 can be classified as Palustrine Forested.



- **Wetland 2** – located on the northwest-central portion of the review area, this wetland feature is located within the floodplain of S1 and is fed by surficial runoff and bankfull events. Generally this feature flows into channel S1 to the northwest. W2 can be classified as Palustrine Forested.
- **Wetland 3** – located on the northern portion of the review area, this wetland feature is fed by S1 to the southwest and is the receiving water for discharge from the assessment area. This wetland area extends off of the project site to the east and is part of a larger wetland system along Little Cross Creek. W3 can be classified as Palustrine Forested.
- **Stream 1** – a perennial stream feature that transects the western and northern portions of the review area and is the dominant hydrologic feature within the assessment area. S1 extends approximately 810 linear feet (LF) within the assessment area, flowing from offsite in the southwest of the assessment area, northward along the western portion of the site until it exits the assessment area to the northeast. A small portion of the stream flows through a culvert under an access road between features W2 and W3. This road is shown on the Wetlands Identification Map as a break in the stream feature. The feature is mapped on the NRCS Soil Map as well as the USGS Topographical Map. Since the feature is located in the Lower Cape Fear River Basin, it is not currently subject to NC DWR riparian buffer requirements.

CONCLUSION

Based on F&R's assessment, three likely jurisdictional wetlands (W1, W2, and W3), and one likely jurisdictional stream (S1) were identified and delineated within the assessment area during our review. It is F&R's opinion that the portions of the features contained within the assessment area are likely to be considered jurisdictional by the USACE and/or NCDWR based on F&R's on-site observations. Based on this information, the features would be subject to USACE or NCDWR regulations in accordance with the Clean Water Act (CWA); however, on-site determinations by the USACE and NCDWR will be required in order to confirm or deny jurisdiction by these two regulatory agencies. Please see Figure 6 in the attachments for a graphic depiction of the wetland and stream features identified within the review area.

Please note that the attached Wetlands Identification Map prepared by F&R is meant for use as a reference document only. This map is not designed to satisfy any requirement for a survey plat by a licensed surveyor nor is it intended to be used for construction purposes or relied upon for the jurisdictional limits of the mapped surface features.

GENERAL GUIDANCE

F&R recommends that plans for development of the subject property consider the USACE and NCDWR procedures for assessing impacts to jurisdictional wetlands and/or streams (i.e., avoid, minimize, and mitigate) to optimize permitting strategies.

If proposed development on the project site does not result in impacts to wetland areas, the areas immediately adjacent to wetland boundaries, or the identified Waters of the US, a USACE permit will not be necessary. Typical activities requiring USACE permitting include, but are not limited to, depositing of fill or dredged material in wetlands; site development fill; construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs; and placement of riprap and road fill.



If impacts to these areas are anticipated, F&R recommends that site plans be developed that optimize permitting strategies to comply with the USACE, NCDWR, and local municipality procedures for assessing impacts to jurisdictional wetlands and/or “Waters of the US” (i.e., avoid, minimize, and mitigate).

If future impacts to jurisdictional wetlands and/or streams are anticipated, the appropriate permit applications for regulatory review must be completed prior to any initiation of activities that may require permitting.

F&R can provide alternative design measures and make the written request based upon extensive experience and professional relationships with the USACE and NCDWR throughout North Carolina in the event that impacts are unavoidable and written authorization needs to be requested.

LIMITATIONS

This report has been prepared for the exclusive use of McKim and Creed, Inc. (Client) and others so designated by the Client for this specific project. These services have been provided in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. Our observations were based upon conditions readily visible at the site at the time of our visit. If additional information becomes available which may affect our conclusions and recommendations, we request the opportunity to review the information, and reserve the right to modify our report, as warranted.

CLOSURE

We appreciate the opportunity to serve as your Environmental Consultant. Please do not hesitate to contact us if you have any questions, comments or additional needs.

Sincerely,

FROEHLING & ROBERTSON, INC.

Alex D. Aycrigg, MS, PWS
Wetland Scientist

Elias N. Ruhl
Practice Leader, Natural Resources

Attachments: Figure 1: Site Location Map
 Figure 2: Site Aerial Map
 Figure 3: USGS Topographical Map
 Figure 4: NRCS Soil Survey Map
 Figure 5: National Wetland Inventory Map
 Figure 6: Wetlands Identification Map
 Site Photographs
 USACE Data Forms
 NCDWR Stream Determination Forms



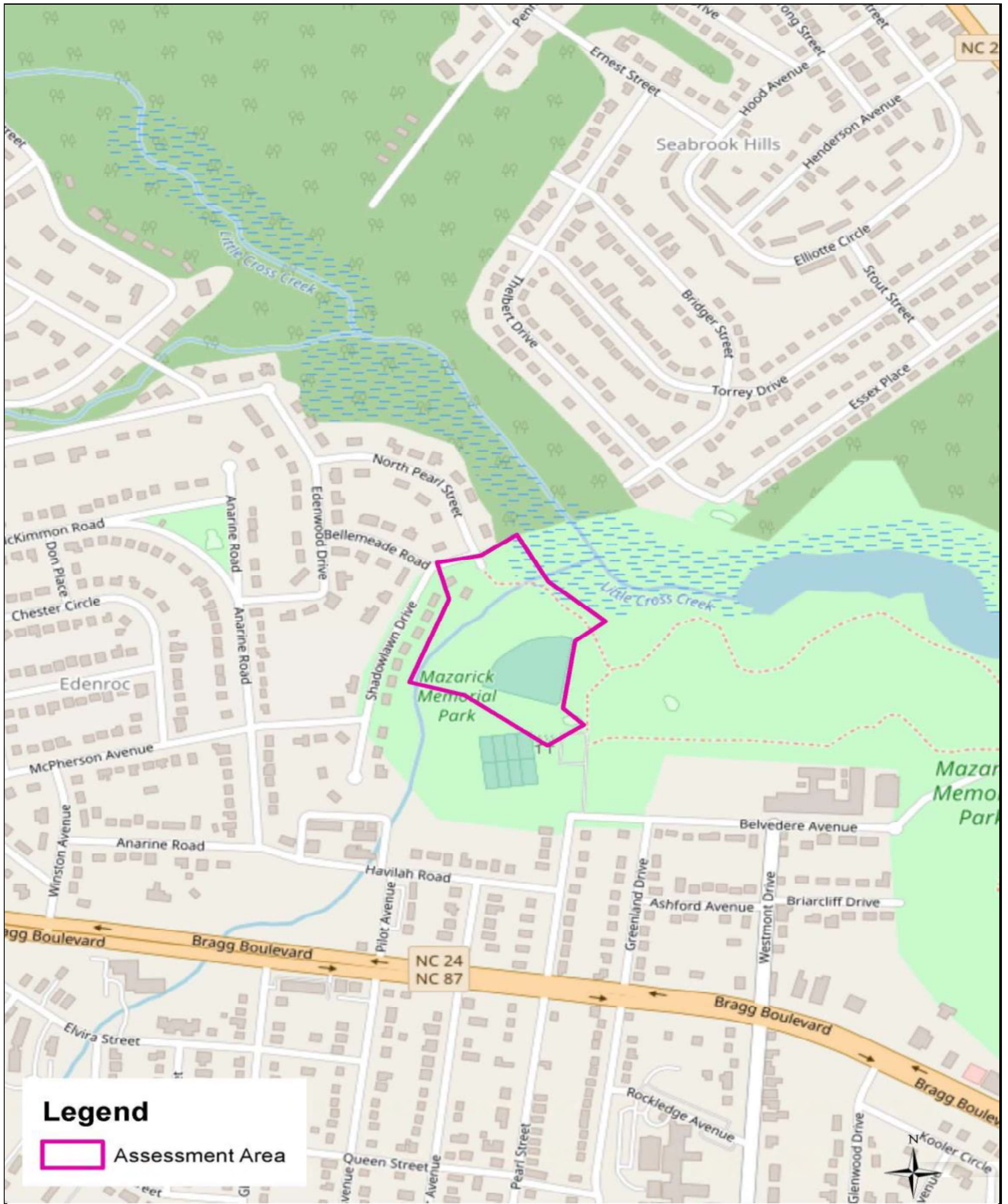
GENERAL TERMS, CONDITIONS, AND LIMITATIONS

Froehling & Robertson, Inc. by virtue of providing the services described in this proposal does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, State, or Federal public agencies any conditions at the site that may present a potential danger to public health, safety, or the environment. The CLIENT agrees to notify the appropriate local, State, or Federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment.


The scope of work will be limited to what is provided for in this proposal. By engaging F&R, Client warrants that they have full legal authority to provide access to the property to F&R in order to perform our proposed scope of work. This evaluation will not constitute an exhaustive evaluation of the site or extant reports. Our services will be based upon available data and upon current industry standards. Under this scope of services, F&R assumes no responsibility regarding response actions conducted by the Client and/or outside contractors initiated as a result of this study(s). Response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements, and should be performed by appropriate trained and licensed-personnel, as warranted. F&R also assumes no responsibility regarding implementation of any recommendations made as a result of this report.

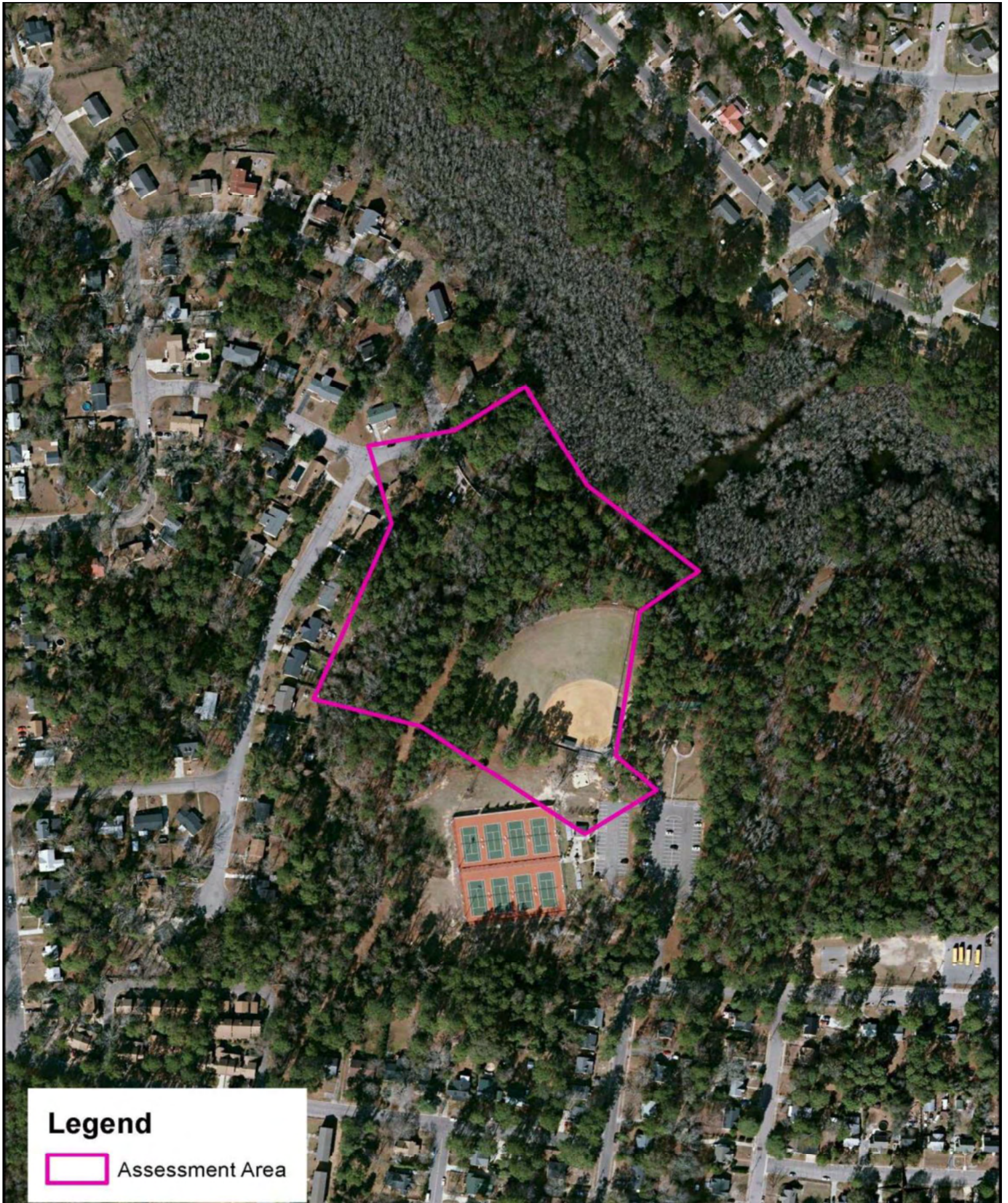
The findings, recommendations, or discussions provided as part of our services should not be construed in any way as a recommendation to purchase, sell, or develop the project site. F&R retains the right to revise our opinions or conclusions if new information is later discovered or made available.

When hazardous materials are known, assumed or suspected to exist at a site, F&R is required to take appropriate precautions to protect the health and safety of personnel, to comply with applicable laws and regulations, and to follow procedures that an engineer deemed prudent to minimize physical risks to employees and the public. The CLIENT hereby warrants that, if he knows or has any reason to assume or suspect that hazardous materials may exist at the project site, the CLIENT has so informed F&R.




SITE LOCATION MAP

 Froehling & Robertson, Inc. 306 Hubert Street Raleigh, North Carolina 27603 T 919.828.3441	Client:	McKim and Creed	FIGURE 1 No.
	Project:	Shadowlawn Aerial Crossing	
	Location:	Fayetteville, Cumberland County, North Carolina	
	Project Number:	59Y-0127	
	Data Source:	ESRI Open Street Map	
Date:	May 2020	Scale: Not Shown	



Legend

 Assessment Area

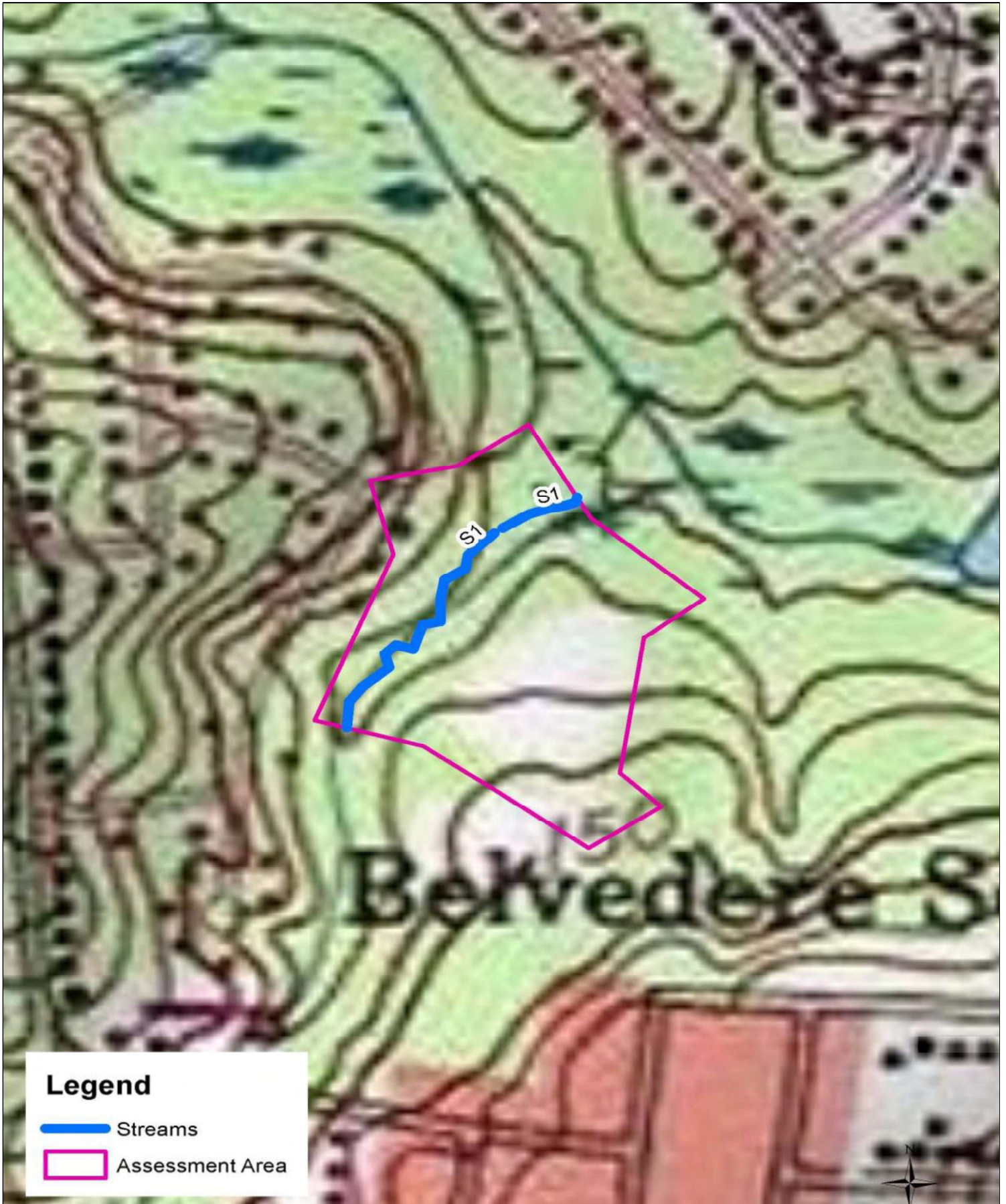
SITE LOCATION MAP



Froehling & Robertson, Inc.
 306 Hubert Street
 Raleigh, North Carolina 27603
 T 919.828.3441

Client:	McKim and Creed
Project:	Shadowlawn Aerial Crossing
Location:	Fayetteville, Cumberland County, North Carolina
Project Number:	59Y-0127
Data Source:	ESRI Aerial Photo dated 2017
Date:	May 2020
	Scale: Not Shown

FIGURE
 No. 2



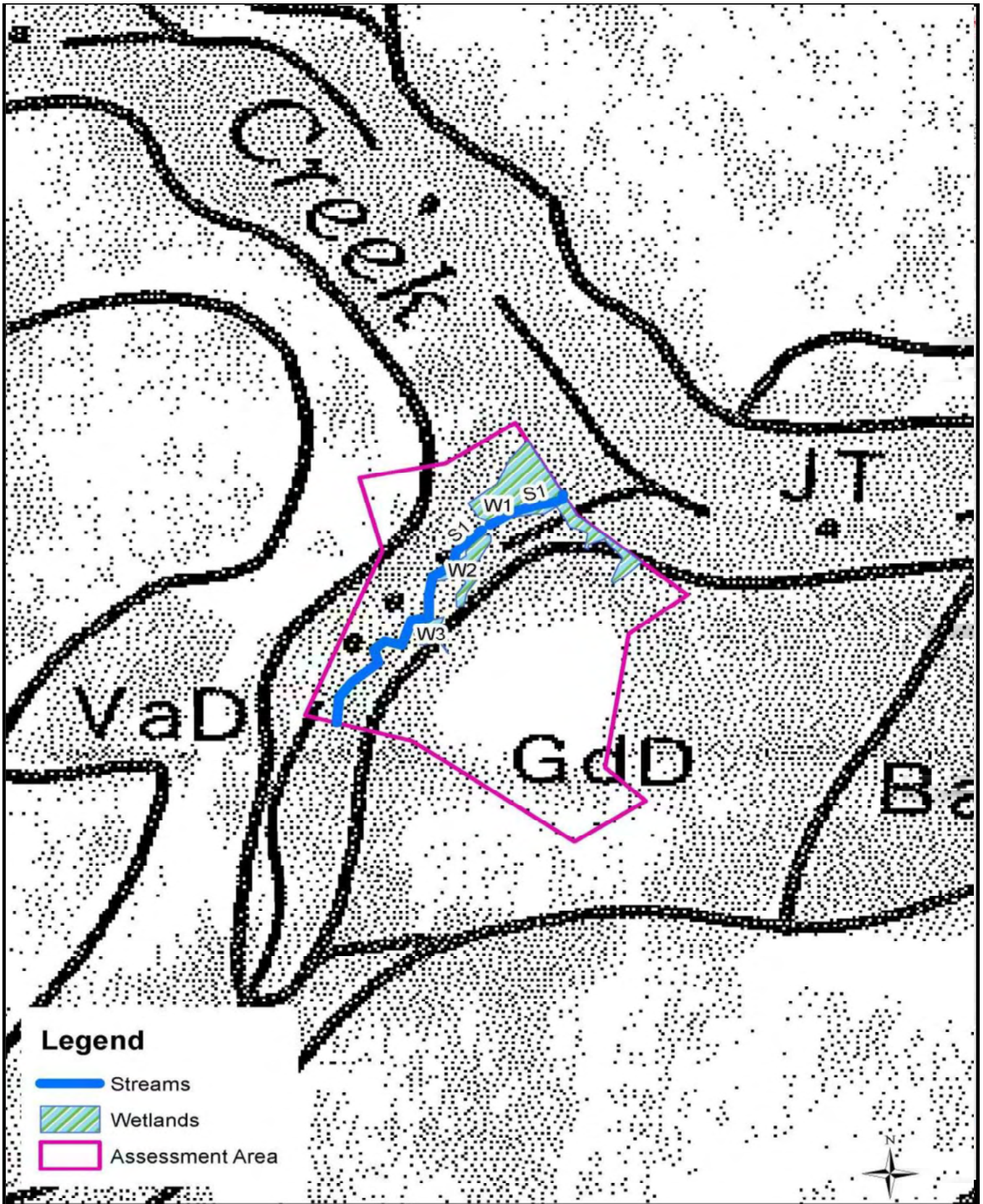
USGS TOPOGRAPHIC MAP



Froehling & Robertson, Inc.
 306 Hubert Street
 Raleigh, North Carolina 27603
 T 919.828.3441

Client:	McKim & Creed	
Project:	Shadowlawn Aerial Crossing	
Location:	Fayetteville, Cumberland County, North Carolina	
Project Number:	59Y-0127	
Data Source:	USGS Topo "Fayetteville, NC" dated 1997	
Date:	May 2020	Scale: Not Shown

FIGURE 3
 No.



Legend

-  Streams
-  Wetlands
-  Assessment Area



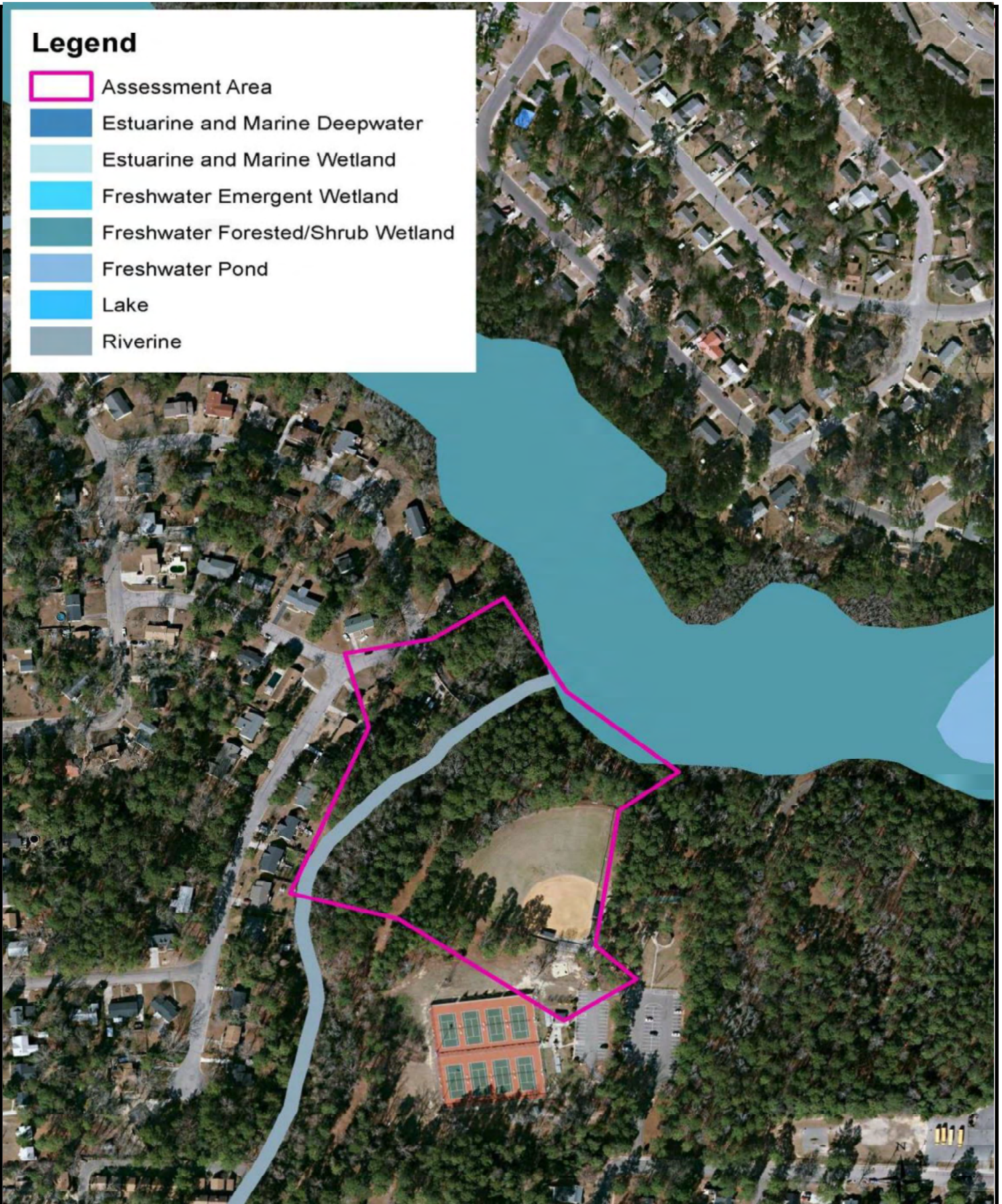
Froehling & Robertson, Inc.
 306 Hubert Street
 Raleigh, North Carolina 27603
 T 919.828.3441

Client:	McKim & Creed	
Project:	Shadowlawn Aerial Crossing	
Location:	Fayetteville, Cumberland County, North Carolina	
Project Number:	59Y-0127	
Data Source:	NRCS Soil Survey for Cumberland County, NC 1981	
Date:	May 2020	Scale: Not Shown

FIGURE 4
No.

Legend

- Assessment Area
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine



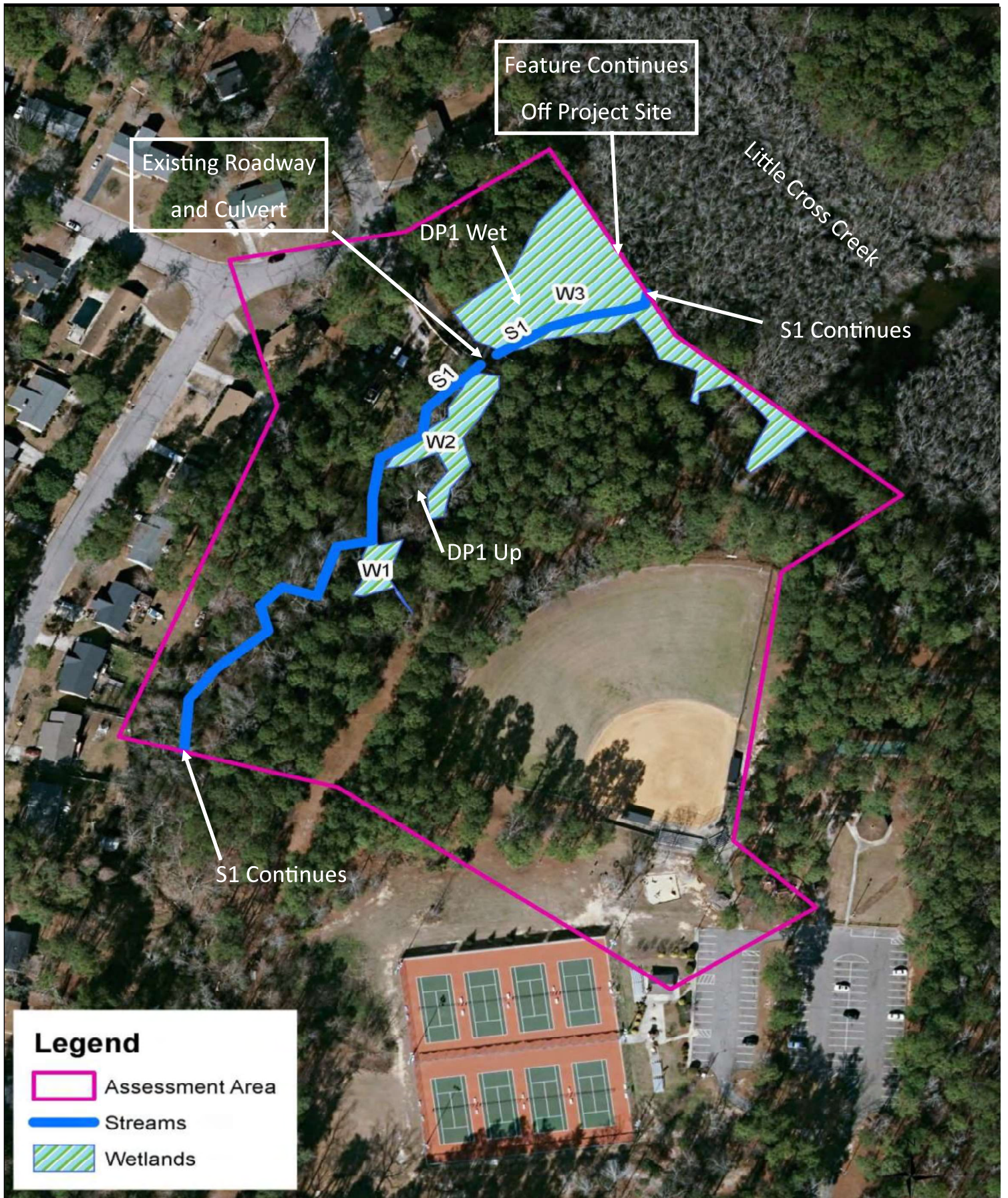
NATIONAL WETLANDS INVENTORY MAP



Froehling & Robertson, Inc.
 306 Hubert Street
 Raleigh, North Carolina 27603
 T 919.828.3441

Client:	McKim & Creed	
Project:	Shadowlawn Aerial Crossing	
Location:	Fayetteville, Cumberland County, North Carolina	
Project Number:	59Y-0127	
Data Source:	USFWS National Wetland Inventory	
Date:	May 2020	Scale: Not Shown

FIGURE 5
No.



WETLANDS IDENTIFICATION MAP



Froehling & Robertson, Inc.
 306 Hubert Street
 Raleigh, North Carolina 27603
 T 919.828.3441

Client:	McKim and Creed	FIGURE No. 6
Project:	Shadowlawn Aerial Crossing	
Location:	Fayetteville, Cumberland County, North Carolina	
Project Number:	59Y-0127	
Data Source:	F&R Field Observations	
Date:	May 2020	
Scale: Not Shown		



1. View of Stream 1 as it enters the assessment area looking down-stream to the northeast. Note the well-developed bed and banks. This feature flows northeast through the review area and drains directly to Little Cross Creek off-site to the east.



2. View of S1 looking up-stream to the west. Note the large cobble in the streambed.



3. View of existing aerial sewer pipe crossing S1 to be replaced.



4. View of S1 adjacent to Wetland 1.



5. View of wetland feature W1 facing north.



6. View of wetland feature W2 facing west



7. View of wetland feature W3 facing north.



8. View of the existing sewer line and wooded areas within the review area looking north.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Shadowlawn Aerial Crossing City/County: Cumberland Co Sampling Date: 3/17/20
 Applicant/Owner: Fayetteville Public Works Commission State: NC Sampling Point: DP1 Wet
 Investigator(s): A. Aycrigg Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 2
 Subregion (LRR or MLRA): _____ Lat: 35.074054 Long: -78.908220 Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: This data sheet applies to features W1, W2, W3.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)

Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP1 Wet

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>20</u>)					
1. <u>Magnolia virginiana</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
2. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>		
3. <u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
<u>65</u> = Total Cover 50% of total cover: <u>32.5</u> 20% of total cover: <u>13</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____	
Sapling Stratum (Plot size: <u>20</u>)					
1. <u>Quercus nigra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>		
2. <u>Magnolia virginiana</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
<u>20</u> = Total Cover 50% of total cover: <u>10</u> 20% of total cover: <u>6</u>				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
Shrub Stratum (Plot size: <u>20</u>)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
<u>0</u> = Total Cover 50% of total cover: <u>7.5</u> 20% of total cover: <u>3</u>				Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.	
Herb Stratum (Plot size: <u>10</u>)					
1. <u>Panicum spp.</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>		
2. <u>Rubus spp.</u>	<u>10</u>	_____	_____		
3. <u>Arundinaria gigantea</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
<u>50</u> = Total Cover 50% of total cover: <u>40</u> 20% of total cover: <u>10</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Woody Vine Stratum (Plot size: <u>10</u>)					
1. <u>Smilax rotundifolia</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
<u>5</u> = Total Cover 50% of total cover: <u>2.5</u> 20% of total cover: <u>1</u>					
Remarks: (If observed, list morphological adaptations below).					

SOIL

Sampling Point: DP1 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10 Y/R 3/3						FS	
2-6	10 Y/R 5/2	97	10 Y/R 6/8	3	C	M	SL	matrix and pore linings
6-12	10 Y/R 5/6	97	10 Y/R 6/8	3	C	M	SCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Mucky Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Shadowlawn Aerial Crossing City/County: Cumberland Co Sampling Date: 3/17/20
 Applicant/Owner: Fayetteville PWC State: NC Sampling Point: DP1 Up
 Investigator(s): A. Aycrigg Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR or MLRA): _____ Lat: 35.072603 Long: -78.909372 Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP1 Up

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>20</u>)				
1. <u>Pinus palustris</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>Liquidambar styraciflua</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Liriodendron tulipifera</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>60</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
50% of total cover: <u>30</u>		20% of total cover: <u>6</u>		
Sapling Stratum (Plot size: <u>20</u>)				
1. <u>Pinus taeda</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Liriodendron tulipifera</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>15</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>8</u>		20% of total cover: <u>3</u>		
Shrub Stratum (Plot size: <u>20</u>)				
1. <u>Aralia spinosa</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>5</u> = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
50% of total cover: <u>7.5</u>		20% of total cover: <u>3</u>		
Herb Stratum (Plot size: <u>10</u>)				
1. <u>Panicum spp.</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	(This section is part of the main form grid)
2. <u>Rubus spp.</u>	<u>15</u>	<u>No</u>	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>45</u> = Total Cover				
50% of total cover: <u>40</u>		20% of total cover: <u>16</u>		
Woody Vine Stratum (Plot size: <u>10</u>)				
1. <u>Smilax rotundifolia</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	(This section is part of the main form grid)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>5</u> = Total Cover				
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		
Remarks: (If observed, list morphological adaptations below).				

SOIL

Sampling Point: DP1 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10 Y/R 3/3						SL	
3-6	10 Y/R 5/4						SL	
6-12	10 Y/R 5/6						SCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Organic Bodies (A6) (LRR P, T, U)
- 5 cm Mucky Mineral (A7) (LRR P, T, U)
- Muck Presence (A8) (LRR U)
- 1 cm Muck (A9) (LRR P, T)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Coast Prairie Redox (A16) (MLRA 150A)
- Sandy Mucky Mineral (S1) (LRR O, S)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR P, S, T, U)

- Polyvalue Below Surface (S8) (LRR S, T, U)
- Thin Dark Surface (S9) (LRR S, T, U)
- Loamy Mucky Mineral (F1) (LRR O)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR U)
- Depleted Ochric (F11) (MLRA 151)
- Iron-Manganese Masses (F12) (LRR O, P, T)
- Umbric Surface (F13) (LRR P, T, U)
- Delta Ochric (F17) (MLRA 151)
- Reduced Vertic (F18) (MLRA 150A, 150B)
- Piedmont Floodplain Soils (F19) (MLRA 149A)
- Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR O)
- 2 cm Muck (A10) (LRR S)
- Reduced Vertic (F18) (outside MLRA 150A,B)
- Piedmont Floodplain Soils (F19) (LRR P, S, T)
- Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

NC DWQ Stream Identification Form Version 4.11

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Date: 3/17/20	Project/Site: Shadowbawn	Latitude: 35.073273
Evaluator: A. Aycrigg	County: Cumberland	Longitude: -78.908980
Total Points: 34.5 <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination (circle one) Ephemeral Intermittent <u>Perennial</u>	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 16.5)

	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 9)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

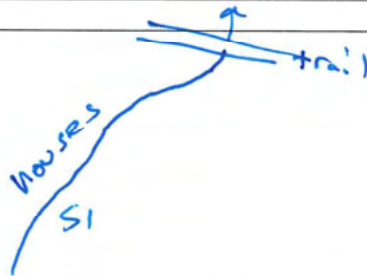
C. Biology (Subtotal = 9)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:



APPENDIX D

NC-G01 CERTIFICATE OF COVERAGE

Certificate of Coverage

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES

GENERAL PERMIT NO. NCG010000

NC Reference No. NCG01-2021-6399
Certificate of Coverage No. NCC216399

STORMWATER DISCHARGES

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provision of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

Fayetteville Public Works Commission

is hereby authorized to discharge stormwater associated with CONSTRUCTION ACTIVITIES to surface waters of North Carolina from a site located at:

Shadowlawn Aerial Sewer Crossing Replacement
Shadowlawn Dr
Fayetteville
Cumberland County

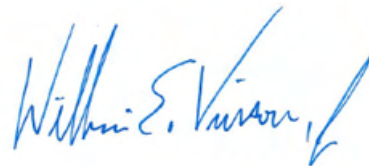
in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in N.C. General Permit No. NCG010000.

This Certificate of Coverage is affiliated with **E&SC Plan Project No.** CUMBE-2022-052

This Certificate of Coverage shall become effective 11/23/2021.

This Certificate of Coverage shall remain in effect until rescinded or expired.

This Certificate of Coverage will expire on the anniversary of its effective date unless it is renewed by payment of the annual administration and compliance fee.



for Brian Wrenn
Director, Division of Energy, Mineral, and Land Resources
By the Authority of the Environmental Management Commission

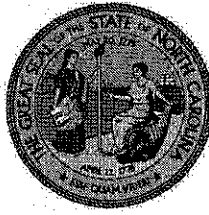
APPENDIX E

**NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
EROSION & SEDIMENT CONTROL PERMIT**

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

BRIAN WRENN
Director



NORTH CAROLINA
Environmental Quality

November 2, 2021

LETTER OF APPROVAL

Fayetteville Public Works Commission
Misty Manning Engineering Manager
Post Office Box 1089
Fayetteville, NC 28302

RE: Project Name: Shadowlawn Aerial Sewer Crossing Replacement
Acres Approved: 2.32
Project ID: CUMBE-2022-052
County: Cumberland, City: Fayetteville
Address: Shadowlawn Drive
River Basin: Cape Fear
Stream Classification: Other
Submitted by: Nisha Thuruthy
Date Received by LQS: October 19, 2021
Plan Type: Utility

Dear Mrs. Manning:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable and hereby issue this Letter of Approval. The enclosed Certificate of Approval must be posted at the job site. This plan shall expire three (3) years following the date of approval, if no land disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129.

As of April 1, 2019, all new construction activities are required to complete and submit an electronic Notice of Intent (NOI) form requesting a Certificate of Coverage (COC) under the NCG010000 Construction Stormwater General Permit. This form **MUST** be submitted and COC issued prior to the commencement of any land disturbing activity on the above-named project. The NOI form may be accessed at deq.nc.gov/NCG01. Please direct questions about the NOI form to Annette Lucas at Annette.lucas@ncdenr.gov or Paul Clark at Paul.clark@ncdenr.gov. After you submit a complete and correct NOI Form, a COC will be emailed to you within **three business days**. Initially, DEMLR will not charge a fee for coverage under the NCG01 permit. However, on or after June 1, 2019, a \$100 fee will be charged annually. This fee is to be sent to the DEMLR Stormwater Central Office staff in Raleigh.



Title 15A NCAC 4B .0118(a) and the NCG01 permit require that the following documentation be kept on file at the job site:

1. The approved E&SC plan as well as any approved deviation.
2. The NCG01 permit and the COC, once it is received.
3. Records of inspections made during the previous 30 days.

Also, this letter gives the notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.


North Carolina's Sedimentation Pollution Control Act is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to insure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you provided. You are requested to file an amended form if there is any change in the information included on the form. This permit allows for a land-disturbance, as called for on the application plan, not to exceed the approved acres. Exceeding the acreage will be a violation of this permit and would require a revised plan and additional application fee. Any addition in impervious surface, over that already noted on the approved plan, would also require a revised plan to verify the appropriateness of the erosion control measures and the stormwater retention measures. (GS 113A-54.1(b)). In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify us if you plan to have a preconstruction conference.

Your cooperation is appreciated.

Sincerely,



Chris Baker
Assistant Regional Engineer
DEMLR - Fayetteville Regional Office

Enclosures: Certificate of Approval

cc: Nisha Thuruthy, P. E., McKim & Creed, Inc. – electronic copy
Michael Naylor, Cumberland County Inspections Office – electronic copy
Fayetteville Regional Office

APPENDIX F

CASE FORM 101 STATEMENT OF SPECIAL INSPECTION

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Soils and Foundations | <input type="checkbox"/> Spray Fire Resistant Material |
| <input checked="" type="checkbox"/> Cast-in-Place Concrete | <input type="checkbox"/> Wood Construction |
| <input type="checkbox"/> Precast Concrete | <input type="checkbox"/> Exterior Insulation and Finish System |
| <input type="checkbox"/> Masonry | <input type="checkbox"/> Mechanical & Electrical Systems |
| <input checked="" type="checkbox"/> Structural Steel | <input type="checkbox"/> Architectural Systems |
| <input type="checkbox"/> Cold-Formed Steel Framing | <input type="checkbox"/> Special Cases |

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Special Inspection Coordinator	<i>TBD</i>	<i>TBD</i>
2. Inspector	<i>TBD</i>	<i>TBD</i>
3. Inspector	<i>TBD</i>	<i>TBD</i>
4. Testing Agency	<i>TBD</i>	<i>TBD</i>
5. Testing Agency	<i>TBD</i>	<i>TBD</i>
6. Other	<i>TBD</i>	<i>TBD</i>

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category	<i>C</i>
Quality Assurance Plan Required (Y/N)	<i>N</i>

Description of seismic force resisting system and designated seismic systems:

Non-Building Type Structure – “Other” Self Supported Structure Not Covered by ASCE 7 Table 15.4-2.

Quality Assurance for Wind Requirements

Basic Wind Speed (3 second gust)	<i>140 mi/hr</i>
Wind Exposure Category	<i>C</i>
Quality Assurance Plan Required (Y/N)	<i>N</i>

Description of wind force resisting system and designated wind resisting components:

Steel “H”-Piles Cantilevered from Ground Embedment.

Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated above must submit a Statement of Responsibility.

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE	Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.
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International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Exterior Design Institute (EDI) Certification

EDI-EIFS	EIFS Third Party Inspector
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Other

Item	Agency # (Qualif.)	Scope
1. Shallow Foundations	PE/GE	<p>Inspect soils below footings for adequate bearing capacity and consistency with geotechnical report.</p> <p>Inspect removal of unsuitable material and preparation of subgrade prior to placement of controlled fill.</p> <p>Not Applicable.</p>
2. Controlled Structural Fill	PE/GE	<p>Perform sieve tests (ASTM D422 & D1140) and modified Proctor tests (ASTM D1557) of each source of fill material.</p> <p>Inspect placement, lift thickness and compaction of controlled fill.</p> <p>Test density of each lift of fill by nuclear methods (ASTM D2922).</p> <p>Verify extent and slope of fill placement.</p> <p>Not Applicable.</p>
3. Deep Foundations	PE/GE	<p>Inspect and log pile driving operations. Record pile driving resistance and verify compliance with driving criteria.</p> <p>Inspect piles for damage from driving and plumbness.</p> <p>Verify pile size, length and accessories.</p> <p>Inspect installation of drilled pier foundations. Verify pier diameter, bell diameter, lengths, embedment into bedrock and suitability of end bearing strata ... Not Applicable.</p>
4. Load Testing		
4. Other:		

Item	Agency # (Qualif.)	Scope
1. Mix Design	ACI-CCI ICC-RCSI	Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.
2. Material Certification		
3. Reinforcement Installation	ACI-CCI ICC-RCSI	Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters.
4. Post-Tensioning Operations	ICC-PCSI	Inspect placement, stressing, grouting and protection of post-tensioning tendons. Verify that tendons are correctly positioned, supported, tied and wrapped. Record tendon elongations. Not Applicable.
5. Welding of Reinforcing	AWS-CWI	Welding reinforcing is not allowed.
6. Anchor Rods		Inspect size, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors. Not Applicable.
7. Concrete Placement	ACI-CCI ICC-RCSI	Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.
8. Sampling and Testing of Concrete	ACI-CFTT ACI-STT	Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).
9. Curing and Protection	ACI-CCI ICC-RCSI	Inspect curing, cold weather protection and hot weather protection procedures.
10. Other:		

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures <input type="checkbox"/> Fabricator Exempt	AWS/AISC- SSI ICC-SWSI	<i>Review shop fabrication and quality control procedures.</i> Not Applicable.
2. Material Certification	AWS/AISC- SSI ICC-SWSI	<i>Review certified mill test reports and identification markings on wide flange shapes, high strength bolts, nuts and welding electrodes.</i> Not Applicable.
3. Open Web Steel Joists		<i>Inspect installation, field welding and bridging of joists.</i> Not Applicable.
4. Bolting	AWS/AISC- SSI ICC-SWSI	<i>Inspect installation and tightening of high strength bolts. Verify that splines have separated from tension control bolts. Verify proper tightening sequence. Continuous inspection of bolts in slip-critical connections.</i> Not Applicable.
5. Welding	AWS-CWI ASNT	<i>Visually inspect all welds. Inspect pre-heat, post-heat and surface preparation between passes. Verify size and length of fillet welds.</i> Ultrasonic testing of all full-penetration welds.
6. Shear Connectors	AWS/AISC- SSI ICC-SWSI	<i>Inspect size, number, positioning and welding of shear connectors. Inspect suds for full 360 degree flash. Ring test all shear connectors with a 3 lb hammer. Bend test all questionable studs to 15 degrees.</i> Not Applicable.
7. Structural Details	PE/SE	<i>Inspect steel frame for compliance with structural drawings, including bracing, member configuration and connection details.</i> Not Applicable.
8. Metal Deck	AWS-CWI	<i>Inspect welding and side lap fastening of metal roof and floor deck.</i> Not Applicable.
9. Other:		

Instructions – Preparation of the Statement of Special Inspections

1. Who Prepares the Form:

The program of inspection and testing for a project should be prepared by the Registered Design Professional (RDP) that is in responsible charge of the building system requiring inspections and testing. The Structural Engineer of Record (SER) should prepare the sections required for the structural elements such as foundations, concrete, structural steel, etc. The Architect and MEP Engineer of Record should prepare the corresponding sections of the SSI for the building systems that they are responsible for. For further explanation, please refer to the “Guide to Special Inspections and Quality Assurance”.

2. The Front Page:

2-1. At the top of the page indicate the project name and location as they appear on the Contract Documents, provide the Owner’s name (individual, private company, municipality, government agency, etc.), and indicate the Design Professional In Responsible Charge. This should be the RDP in responsible charge of the building systems for which this Statement of Special Inspections is being prepared. See explanation in item 1 above.

2-2. Next, read the first paragraph and check the box below indicating the discipline(s) that this SSI will encompass (Structural, Architectural, Mechanical/Electrical/Plumbing, or Other).

2-3. After reading the remaining paragraphs, the RDP must indicate the frequency of “Interim Reports” required from the Special Inspection Coordinator for the project. This can be indicated directly on the page, i.e. ”weekly”, or the adjacent box can be checked to attach a more specific schedule.

2-4. Near the bottom of the page, the RDP must print, sign, and date the form, and stamp the form with their professional seal in the box provided.

2-5. The Owner or Owner’s agent must sign and date the front page after the SSI has been completed by the RDP.

2-6. The Building Official must sign and date the form upon acceptance.

3. Page 2 – Schedule of Inspection and Testing Agencies:

3-1. The top of the page lists all of the categories of building systems with a box next to each. The RDP must check the boxes for only the building systems that are going to be covered in this SSI. A completed inspection program page must be attached for each building system that is checked off. (See instruction #5 below.)

3-2. The chart below is where the members of the Special Inspection Program are listed. Their names, addresses, telephone numbers, and emails should be filled out in the appropriate boxes. If the Inspectors and Testing Agencies have not been determined yet, the RDP can fill in the boxes with “To Be Determined”.

4. Page 3 – Quality Assurance Plan:

4-1. The RDP must review sections 1705 and 1706 in Chapter 17 of the IBC to determine if the project requires a Quality Assurance Plan for the seismic force and wind force resisting systems and components.

4-2. The RDP must indicate whether or not a Quality Assurance Plan is required by filling in the information requested on the page. It is only necessary to provide descriptions

of the seismic and wind force resisting systems if it is determined that a Quality Assurance Plan is required.

5. Inspection Program Pages For Each Building System:

- 5-1. There is a page attached for each building system where the RDP identifies the inspection requirements of each system. Fill out the pages for only the building systems included in this SSI. Do not include blank pages for building systems not covered under this SSI.
- 5-2. Indicate the inspection or testing firm (Agency #) that will perform each inspection task. The Agency # is the number listed next to the Inspector or Testing Laboratory on the chart on page 2 of the SSI.
- 5-3. Indicate the required qualifications of the Inspector for each inspection. A list of qualifications of Inspectors and testing technicians is provided on page 4 of the SSI for reference. The RDP may require additional qualifications beyond the ones listed if they feel it is appropriate. Suggested qualifications have been included for consideration. The RDP must determine what qualifications are appropriate for the particular project and confirm that the selected agency employs individuals with the specified qualifications.
- 5-4. The scope of each inspection must be filled in by the RDP. The editable text provided in italics reflects the code mandated minimum inspection requirements designated in section 1704 of IBC Chapter 17. The editable text does not include the inspections requirements for seismic and wind resisting systems listed in sections 1705 through 1708. The RDP must determine if the project falls under the requirements of sections 1705 to 1708 and add the required inspections to the building systems. The final scope of the inspections required for the project must be determined by the RDP.
- 5-5. Descriptions of all inspections must include the required frequency of each inspection or test.

APPENDIX G

CASE FORM 102 FINAL REPORT OF SPECIAL INSPECTIONS

Final Report of Special Inspections

Project: *Shadowlawn Aerial Sewer Crossing Replacement*

Location: *Fayetteville, Cumberland County, North Carolina*

Owner: *Fayetteville PWC*

Owner's Address: *955 Old Wilmington Road, Fayetteville, NC 28301*

Architect of Record:

Structural Engineer of Record:

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector

(Type or print name)

Signature

Date



Licensed Professional Seal

Final Report of Special Inspections

Agent's Final Report

Project: *Shadowlawn Aerial Sewer Crossing Replacement*

Agent:

Special Inspector:

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Agent of the Special Inspector

(Type or print name)

Signature

Date

*Licensed Professional Seal or
Certification*

APPENDIX H

HOUSE EXTERNAL WALL STRUCTURAL INSPECTION REPORT

SHADOWLAWN AERIAL SEWER CROSSING REPLACEMENT

FAYETTEVILLE, NORTH CAROLINA

GENERAL STRUCTURAL SURVEY OF EXISTING RESIDENCES

For

McKim & Creed, Inc.

Performed by

FLEMING & ASSOCIATES, PA
1004 Hay Street
Fayetteville, North Carolina 28305
(910) 433-2825
Our Job No. 21-65

Submitted

August 5, 2021

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Summary	Page i
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814 Shadowlawn Dr.	Pages 1-6
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SUMMARY

Fleming & Associates, PA was retained by McKim & Creed, Inc. to perform a limited visual structural inspection of foundation walls and exteriors of structures potentially affected by the **FPWC Shadowlawn Aerial Sewer Crossing Replacement**. The structures inspected were determined by McKim & Creed, Inc.

The inspections were conducted on July 29, 2021. A total of two (2) structures were inspected. Fleming & Associates, PA visually inspected the exterior elevation facing the future utility easements and noted pre-existing deficiencies. The deficiencies are documented in the following report.

Should any further inspections or assistance be required, please let us know.

Submitted by:

John Kells, PE, SE



08/05/21

ADDRESS:
814 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 1
Area of residence
observed – front
elevation



Photo 2
Area of residence
observed – side
elevation

ADDRESS:
814 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 3
Area of residence
observed – rear
elevation



Photo 4
Area of residence
observed – side
elevation

ADDRESS:
814 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 5
Cracks in concrete
driveway



Photo 6
Cracks in concrete
driveway

ADDRESS:
814 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 7
Horizontal crack for full
length of front porch



Photo 8
Separation crack at
stairs

ADDRESS:
814 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 9
Vertical crack



Photo 10
Step crack

ADDRESS:
814 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 11
Vertical crack

ADDRESS:
818 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 1
Area of residence
observed – front
elevation



Photo 2
Area of residence
observed – side
elevation

ADDRESS:
818 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 3
Area of residence
observed – rear
elevation



Photo 4
Area of residence
observed – side
elevation

ADDRESS:
818 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 5
Cracks in concrete
walkway



Photo 6
Cracks in concrete
driveway

ADDRESS:
818 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 7
Separation crack



Photo 8
Horizontal crack

ADDRESS:
818 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 9
Separation cracks



Photo 10
Vertical crack

ADDRESS:
818 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 11
Vertical crack



Photo 12
Bowed siding

ADDRESS:
818 Shadowlawn Dr.
Fayetteville, NC 28303

DATE OBSERVED:
July 29, 2021



Photo 13
Separation crack at trim

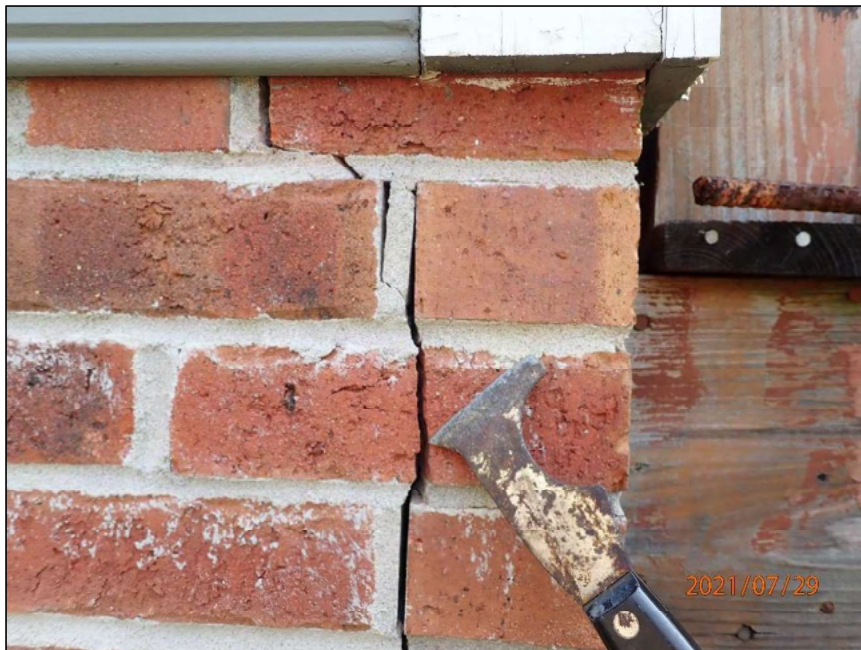


Photo 14
Vertical crack

APPENDIX I

FEMA FUNDED PROJECT REQUIREMENTS

AND NEPA DETERMINATION

APPENDIX I – FEMA FUNDED PROJECT REQUIREMENTS

Fayetteville Public works Commission (“Owner”) will be seeking FEMA reimbursement for this project. All Bidders are notified that the requirements and provisions for FEMA reimbursement for Construction, Procurement, and Professional Services shall be adhered to in the submission of all bids and shall be made a part of this contract.

The Bidder to whom the contract is awarded shall comply with the statutory requirements of these provisions as specified within the contract documents.

UTILIZATION OF SMALL BUSINESSES CONCERNS (48 CFR 52.219-8)

- 1) Definitions. As used in this contract –
 - a) HUBZone small business concern means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.
 - b) Service-disabled veteran-owned small business concern –
 - i) Means a small business concern -
 - (1) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and
 - (2) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.
 - ii) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16). Small business concern means a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto. Small disadvantaged business concern, consistent with 13 CFR 124.1002, means a small business concern under the size standard applicable to the acquisition, that –
 - iii) Is at least 51 percent unconditionally and directly owned (as defined at 13 CFR 124.105) by –
 - (1) One or more socially disadvantaged (as defined at 13 CFR 124.103) and economically disadvantaged (as defined at 13 CFR 124.104) individuals who are citizens of the United States; and
 - (2) Each individual claiming economic disadvantage has a net worth not exceeding \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and
 - iv) The management and daily business operations of which are controlled (as defined at 13.CFR 124.106) by individuals, who meet the criteria in paragraphs (1)(i) and (ii) of this definition.
 - c) Veteran-owned small business concern means a small business concern –
 - i) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and
 - ii) The management and daily business operations of which are controlled by one or more veterans.
 - d) Women-owned small business concern means a small business concern –
 - i) That is at least 51 percent owned by one or more women, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and
 - ii) Whose management and daily business operations are controlled by one or more women.
- 2) It is the policy of the United States that small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns shall have the maximum practicable opportunity to participate in performing contracts let by any Federal agency, including contracts and subcontracts for subsystems, assemblies, components, and related services for major systems. It is further the policy of the United States that its prime contractors establish procedures to ensure the timely payment of amounts due pursuant to the terms of their subcontracts with small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns.
- 3) The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with efficient contract performance. The Contractor further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the awarding agency of the United States as may be necessary to determine the extent of the Contractor's compliance with this clause.
- 4) Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as a small business concern, a veteran-owned small business concern, a service-disabled veteran-owned small business concern, a small disadvantaged business concern, or a women-owned small business concern.
- 5) The Contractor shall confirm that a subcontractor representing itself as a HUBZone small business concern is certified by SBA as a HUBZone small business concern by accessing the System for Award Management database or by contacting the SBA. Options for contacting the SBA include –
 - a) HUBZone small business database search application Web page at http://dsbs.sba.gov/dsbs/search/dsp_searchhubzone.cfm; or <http://www.sba.gov/hubzone>;
 - b) In writing to the Director/HUB, U.S. Small Business Administration, 409 3rd Street, SW., Washington DC 20416; or
 - c) The SBA HUBZone Help Desk at hubzone@sba.gov.

EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result

of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States. The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract. The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of Contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance. The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon Contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Compliance with the Contract Work Hours and Safety Standards Act.

(1) Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

CLEAN AIR ACT AND THE FEDERAL WATER POLLUTION CONTROL ACT

Clean Air Act

1. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.
2. The Contractor agrees to report each violation to the Fayetteville Public Works Commission and understands and agrees that the Fayetteville Public Works Commission will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
3. The Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.

Federal Water Pollution Control Act

1. The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.
2. The Contractor agrees to report each violation to the Fayetteville Public Works Commission and understands and agrees that the Fayetteville Public Works Commission will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
3. The Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.

DEBARMENT AND SUSPENSION

- (1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the Contractor is required to verify that none of the Contractor's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).
- (2) The Contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
- (3) This certification is a material representation of fact relied upon by Fayetteville Public Works Commission. If it is later determined that the Contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to Fayetteville Public Works Commission, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
- (4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

BYRD ANTI-LOBBYING AMENDMENT

Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352 (as amended)

Contractors who apply or bid for an award of \$100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

PROCUREMENT AND RECOVERED MATERIALS

1. In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—

- A. Competitively within a timeframe providing for compliance with the contract performance schedule;
- B. Meeting contract performance requirements; or
- C. At a reasonable price.

2. Information about this requirement, along with the list of EPA designated items, is available at EPA's Comprehensive Procurement Guidelines web site, <https://www.epa.gov/smm/comprehensiveprocurement-guideline-cpg-program>.

3. The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act.”

CERTIFICATION REGARDING LOBBYING (44 CFR PART 18)

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure. The Contractor, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official

Name and Title of Contractor's Authorized Official

Date

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project PA-04-NC-4393-PW-00924

Title: 69909 - Shadowlawn Dr. Aerial Sewer Line

NEPA DETERMINATION

Non Compliant Flag: No	EA Draft Date:	EA Final Date:
EA Public Notice Date:	EA Fonsi	Level: CATEX
EIS Notice of Intent	EIS ROD Date:	

Comment SOW: PA-04-NC-4393-PW-00924, Fayetteville Public Works Commission, Cumberland County, (35.07303, -78.90876) Category F. 0.0% Complete. The applicant will utilize contractors to remove and replace aerial sewer pipes and sewer pipe foundation support pedestals in kind to pre-disaster conditions and function. \$ 228,557.00 - jcarrot1 - 06/10/2019 14:01:35 GMT
 PLEASE DISREGARD PREVIOUS COMMENTSOW: PA-04-NC-4393-PW-00924, Fayetteville Public Works Commission, Cumberland County, (35.07303, -78.90876) Category F. 0.0% Complete. The applicant will utilize contractors to remove and replace aerial sewer pipes and sewer pipe foundation support pedestals in kind to pre-disaster pre-disaster footprint, design, and function with upgraded materials to meet current codes and standards. \$ 228,557.00 - jcarrot1 - 06/12/2019 17:30:48 GMT
 SOW: Fayetteville Public Works Commission, Cumberland County, (35.07303, -78.90876) Category F. Work 0% Complete. The applicant will utilize contract labor to remove and replace aerial sewer pipes and sewer pipe foundation support pedestals within the right of way with upgraded materials to meet current codes and standards. Total Cost: \$228,557.00 - jsimme - 09/30/2019 14:33:12 GMT
 DISREGARD PREVIOUS COMMENT
 SOW: Fayetteville Public Works Commission, Cumberland County, (35.07303, -78.90876) Category F. Work 0% Complete. The applicant will utilize contract labor to remove and replace aerial sewer pipes and sewer pipe foundation support pedestals within the right of way with upgraded materials to meet current codes and standards. Total Cost: \$228,557.00 - jsimme - 10/01/2019 18:25:58 GMT
 *****This PW was previously reviewed by EHP staff. It was resubmitted to EHP after rework for a cost change (\$228,557.00 to \$582,250.00). These changes do not affect the scope of work for project completion and no additional EHP review is required. - jsimme - 12/16/2019 14:47:23 GMT
 PLEASE REGARD PREVIOUS COMMENT - jcarrot1 - 03/27/2020 11:31:42 GMT
 SOW: Fayetteville Public Works Commission, Cumberland County, (35.07303, -78.90876) Category F. Work 0% Complete. Remove and replace "manhole to manhole" sewer lines, sewer line components, and sewer line foundation support pedestals within the right of way with upgraded materials to meet current codes and standards. The applicant will be constructing a temporary sewer bypass for the damaged pipeline until repairs are complete. \$976,250.00 - jcarrot1 - 03/27/2020 11:46:36 GMT
 ** DISREGARD PREVIOUS COMMENT** SOW: Fayetteville Public Works Commission, Cumberland County, Cat F, 0% Complete, Damage Number 227274, Shadowlane Drive Aerial Sewer Line, (Original Manhole South/Bypass (35.072743, -78.908797); Relocation Point 1 (35.072792, -78.908555), Relocation Point 2 (35.072936, -78.908582); Relocation Point 3 (35.073165, -78.908325); and Original Manhole North/Bypass (35.073753, -78.908920)): This PW was previously reviewed by EHP Staff under Version 0. It was submitted to EHP after rework for an Improved Project (Version 1) where the applicant proposes to replace the aerial sewer line in a different location using the same type of materials approved by FEMA. This will result in an additional 70LF of buried 16in steel pipe (going from 120LF to 190LF), an additional 20LF of aerial 16" Steel Pipe (going from 240LF to 260LF), two (2) additional double steel H Pile supports (going from 6 to 8), one additional manhole (going from 2 to 3), and the addition of a Dog House Manhole. The applicant will also be adding 30in steel casing (0.25" Wall Thickness) to the 260LF of 16" aerial Steel Pipe to prevent future damages to the pipe. Construction will take place prior to tie-in to minimize bypass requirements and will result in approx. 2.32 acres of ground disturbance and work in a small stream. The existing aerial line will be demolished, and manholes blocked. Total Cost: \$976,250.00. - mduquett - 03/09/2022 18:07:59 GMT

CATEX CATEGORIES

Catex Category Code	Description	Selected
*n7	(*n7) Federal Assistance for Structure and Facility Upgrades. Federal assistance for the reconstruction, elevation, retrofitting, upgrading to current codes and standards, and improvements of pre-existing facilities in existing developed areas with substantially completed infrastructure, when the immediate project area has already been	Yes

20:50:04

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project PA-04-NC-4393-PW-00924

Title: 69909 - Shadowlawn Dr. Aerial Sewer Line

Catex Category Code	Description	Selected
	disturbed, and when those actions do not alter basic functions, do not exceed capacity of other system components, or modify intended land use. This category does not include actions within or affecting streams or stream banks or actions seaward of the limit of moderate wave action (or V zone when the limit of moderate wave action has not been identified).	
*e2	(*e2) New construction upon or improvement of land where all of the following conditions are met: (a) The structure and proposed use are compatible with applicable Federal, Tribal, State, and local planning and zoning standards and consistent with Federally-approved State coastal management programs, (b) The site is in a developed area and/or a previously-disturbed site, (c) The proposed use will not substantially increase the number of motor vehicles at the facility or in the area, (d) The site and scale of construction or improvement are consistent with those of existing, adjacent, or nearby buildings, and, (e) The construction or improvement will not result in uses that exceed existing support infrastructure capacities (roads, sewer, water, parking, etc.).	Yes

EXTRAORDINARY

Extraordinary Circumstance Code	Description	Selected ?
	No Extraordinary Circumstances were selected	

ENVIRONMENTAL LAW / EXECUTIVE ORDER

Environmental Law/ Executive Order	Status	Description	Comment
Clean Air Act (CAA)	Completed	Project will not result in permanent air emissions - Review concluded	
Coastal Barrier Resources Act (CBRA)	Completed	Project is not on or connected to CBRA Unit or otherwise protected area - Review concluded	
Clean Water Act (CWA)	Completed	Project would affect waters, including wetlands, of the U.S.	CWA: Project may affect waters of the US and permits may be required. See condition. - jcarrot1 - 06/19/2019 17:46:58 GMT**DISREGARD PREVIOUS COMMENT**CWA: Project may affect waters of the US and permits may be required. See condition. - mduquett - 03/09/2022 18:01:46 GMT
	Completed	Project may require Section 404/401 or Section 9/10 (Rivers and Harbors Act) permit, including qualification under Nationwide Permits - Review concluded	
Coastal Zone Management Act (CZMA)	Completed	Project is not located in a coastal zone area and does not affect a coastal zone area - Review concluded	

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project PA-04-NC-4393-PW-00924

Title: 69909 - Shadowlawn Dr. Aerial Sewer Line

Environmental Law/
Executive OrderExecutive Order 11988 -
Floodplains

Status

Description

Comment

Completed

No effect on floodplain/flood levels and
project outside floodplain - Review concluded

EO 11988: Per Flood Insurance Rate Map (FIRM) panel 3720042800J, dated 01/05/2007, the project is located outside the 100-year flood zone and the activity does not adversely affect the natural values and function of floodplains. - jcarrot1 - 06/10/2019 15:53:02 GMT***PLEASE DISREGARD PREVIOUS COMMENT*** - jcarrot1 - 03/27/2020 18:03:04 GMT** EO 11988: Per Cumberland County Flood Insurance Rate Map (FIRM) panel 3720042800J, dated 01/05/2007, the project is located in an unshaded X zone. - jcarrot1 - 03/27/2020 18:24:24 GMT** DISREGARD PREVIOUS COMMENT**EO 11988: Per Cumberland County Flood Insurance Rate Map (FIRM) panel 3720042800J, dated 1/5/2007, the project is located in an unshaded X zone. - mduquett - 03/09/2022 18:04:11 GMT

Executive Order 11990 -
Wetlands

Completed

No effects on wetlands and project outside
wetlands - Review concluded

EO 11990: Portions of this project may be located in a wetland. Wetland avoidance by relocating the facility or abandoning its use is not a practicable alternative and the no-action alternative would adversely impact social or economic resources for the community. See condition. - jcarrot1 - 07/25/2019 12:54:18 GMT** DISREGARD PREVIOUS COMMENT**EO 11990: Project is not located in wetlands per review of USFWS National Wetlands Inventory (NWI) mapper, accessed 2/11/2022. - mduquett - 03/09/2022 18:05:18 GMT

Executive Order 12898 -
Environmental Justice for Low
Income and Minority Populations

Completed

Low income or minority population in or near
project area

Completed

No disproportionately high and adverse
impact on low income or minority population -
Review concluded

Endangered Species Act (ESA)

Completed

Listed species and/or designated critical
habitat present in areas affected directly or
indirectly by the federal action

ESA: Per review of the USFWS website listing of threatened and endangered species for Cumberland County (I Pac) accessed on 06/10/2019 and the North Carolina Natural Heritage Data Explorer website accessed on 06/10/2019. - jcarrot1 - 06/10/2019 14:41:59 GMT** DISREGARD PREVIOUS COMMENT**ESA: Per review of the USFWS website listing of threatened and endangered species for Cumberland County (IPaC) accessed on 02/11/2022 and the North Carolina Natural Heritage Data Explorer website accessed on 02/11/2022. - mduquett - 03/09/2022 17:54:10 GMT

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project PA-04-NC-4393-PW-00924

Title: 69909 - Shadowlawn Dr. Aerial Sewer Line

Environmental Law/ Executive Order	Status	Description	Comment
	Completed	No effect to species or designated critical habitat (See comments for justification) - Review concluded	
Farmland Protection Policy Act (FPPA)	Completed	Project does not affect designated prime or unique farmland - Review concluded	
Fish and Wildlife Coordination Act (FWCA)	Not Applicable	Project does not affect, control, or modify a waterway/body of water - Review concluded	
Migratory Bird Treaty Act (MBTA)	Completed	Project located within a flyway zone	
	Completed	Project does not have potential to take migratory birds - Review concluded	
Magnuson-Stevens Fishery Conservation and Management Act (MSA)	Completed	Project not located in or near Essential Fish Habitat - Review concluded	
National Historic Preservation Act (NHPA)	Completed	Applicable executed Programmatic Agreement (enter date in comments).	NHPA: SHPO letter with this determination was received, dated 06/25/2019. See attached correspondence. - jcarrot1 - 06/27/2019 17:45:55 GMT***PLEASE DISREGARD PREVIOUS COMMENT***NHPA: SHPO letter with this determination was received, dated 03/27/2020. See attached correspondence. - jcarrot1 - 03/27/2020 11:57:05 GMT** DISREGARD PREVIOUS COMMENT** NHPA: SHPO letter was received, dated 03/09/2022. See attached correspondence and conditions. - mduquett - 03/09/2022 17:48:31 GMT
	Completed	No properties in the project area are 50 years or older or listed on the National Register - Review concluded	
	Completed	Project affects undisturbed ground	
	Completed	Project area has no potential for presence of archeological resources	
	Completed	Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence or consultation attached) - Review concluded	
Resource Conservation and Recovery Act, aka Solid Waste Disposal Act (RCRA)	Completed	Review concluded	RCRA: See condition. - mduquett - 03/09/2022 18:02:55 GMT

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project PA-04-NC-4393-PW-00924

Title: 69909 - Shadowlawn Dr. Aerial Sewer Line

Environmental Law/ Executive Order	Status	Description	Comment
State Hazardous Materials and Solid Waste Laws	Completed	Review concluded	SHM&SW: See condition. - mduquett - 03/09/2022 18:03:20 GMT
Wild and Scenic Rivers Act (WSR)	Completed	Project is not along and does not affect Wild and Scenic River - Review concluded	

CONDITIONS

See All Conditions below.

Special Conditions required on implementation of Projects:

Construction activities and equipment storage are not to be located in or impact any adjacent wetlands. All materials and equipment should be staged outside of the wetland on paved or previously disturbed areas.

Source of condition: Executive Order 11990 - Wetlands

Monitoring Required: No

The applicant is responsible for coordinating with and obtaining any required Section 404 permit(s) from the United States Army Corps of Engineers (USACE) and 401 permit(s) from the responsible state or tribal agency prior to initiating work. The applicant shall comply with all conditions and pre-construction notification requirements of the required permit(s), including any applicable regional conditions. All coordination pertaining to these activities or compliance with applicable permits must be documented and maintained in the applicant's permanent files. Copies must be forwarded to the Recipient (state or tribal EMA) and FEMA as part of the permanent project file. Failure to comply with this requirement may jeopardize receipt of federal funds.

Source of condition: Clean Water Act (CWA)

Monitoring Required: No

NHPA Condition: If human remains or intact archaeological features or deposits (e.g., arrowheads, pottery, glass, metal, etc.) are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The subrecipient will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The subrecipient's contractor will provide immediate notice of such discoveries to the applicant. The subrecipient shall contact the North Carolina Office of State Archaeology and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities; all work shall stop immediately, and the proper authorities notified in accordance with North Carolina General Statutes, Chapter 70, Article 3, Section 70-29 and 70-32.

Source of condition: National Historic Preservation Act (NHPA)

Monitoring Required: No

NHPA Condition: **Prior to conducting repairs, applicant must identify the source and location of fill material and provide this information to NCSHPO and FEMA.** Fill material should come from a licensed, permitted commercial source, stockpile or borrow pit. If the borrow pit is privately owned, or is located on previously undisturbed land, or if the fill is obtained by the horizontal expansion of a pre-existing borrow pit, FEMA consultation with the State Historic Preservation Officer will be required. Failure to comply with this condition may jeopardize FEMA funding; verification of compliance will be required at project closeout.

Source of condition: National Historic Preservation Act (NHPA)

Monitoring Required: No

NHPA Condition: Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.

Source of condition: National Historic Preservation Act (NHPA)

Monitoring Required: No

RCRA Condition: Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project, applicant shall handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies. Failure to comply with these

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Project PA-04-NC-4393-PW-00924

Title: 69909 - Shadowlawn Dr. Aerial Sewer Line

conditions may jeopardize FEMA funding; verification of compliance will be required at project closeout.

Source of condition: Resource Conservation and Recovery Act, aka Solid Waste Disposal Act (RCRA)

Monitoring Required: No

SHM&SW Condition: The applicant shall ensure that all debris is separated and disposed of in a manner consistent with NCDEQ, disposal at permitted facilities guidelines or at a disposal site or landfill authorized by NCDEQ. The applicant is responsible for ensuring contracted removal of debris also follows these guidelines. Failure to comply with these conditions may jeopardize FEMA funding; verification of compliance will be required at project closeout.

Source of condition: State Hazardous Materials and Solid Waste Laws

Monitoring Required: No

Standard Conditions:

Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.

This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize federal funding.

If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.

APPENDIX J

US ACE PERMIT

Nationwide Permit 58
Utility Line Activities for Water and Other Substances
Effective Date: March 15, 2021 / Expiration Date: March 15, 2026
Authorities: Sections 10 and 404

Activities required for the construction, maintenance, repair, and removal of utility lines for water and other substances, excluding oil, natural gas, products derived from oil or natural gas, and electricity. Oil or natural gas pipeline activities or electric utility line and telecommunications activities may be authorized by NWP 12 or 57, respectively. This NWP also authorizes associated utility line facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

Utility lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines for water and other substances, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A “utility line” is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. Examples of activities authorized by this NWP include utility lines that convey water, sewage, stormwater, wastewater, brine, irrigation water, and industrial products that are not petrochemicals. The term “utility line” does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for above-ground utility lines: This NWP authorizes the construction or maintenance of foundations for above-ground utility lines in all waters of the United States, provided the foundations are the minimum size necessary.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) a section 10 permit is required; or (2) the discharge will result in the loss of greater than 1/10-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: Where the utility line is constructed, installed, or maintained in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d).

Note 3: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills.

Note 4: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to the General Bridge Act of 1946. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

Note 5: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

Note 6: For activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

GENERAL CONDITIONS

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific

conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. **Navigation.** (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds**. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. **Suitable Material**. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. **Water Supply Intakes**. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects From Impoundments**. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows**. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

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

11. **Equipment**. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. **Soil Erosion and Sediment Controls**. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. **Removal of Temporary Structures and Fills**. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. **Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. **Wild and Scenic Rivers.** (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. **Endangered Species.** (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA

section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWP.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where

"take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. **Migratory Birds and Bald and Golden Eagles.** The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. **Historic Properties.** (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate

documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. **Discovery of Previously Unknown Remains and Artifacts.** Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. **Designated Critical Resource Waters.** Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. **Mitigation.** The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address

documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. **Safety of Impoundment Structures.** To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. **Water Quality.** (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401,

a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. **Coastal Zone Management.** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. **Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. **Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

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

(Transferee)

(Date)

30. **Compliance Certification.** Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the

certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. **Activities Affecting Structures or Works Built by the United States.** If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. **Pre-Construction Notification.** (a) *Timing.* Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33

CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification:* The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided

results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

(c) *Form of Pre-Construction Notification:* The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) *Agency Coordination:* (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will

consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district

engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant

submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat

type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request

may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate

may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef,

permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWP's, a waterbody is a "water of the United States." If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

REGIONAL CONDITIONS:

The following Regional Conditions have been approved by the Wilmington District for the Nationwide Permits (NWP's) published in the January 13, 2021, *Federal Register* (86 FR 2744) announcing the reissuance of 12 existing (NWP's) and four new NWP's, as well as the reissuance of NWP general conditions and definitions with some modifications.

A. EXCLUDED WATERS AND/OR AREAS

The Corps has identified waters that will be excluded from the use of all NWP's during certain timeframes. These waters are:

1. **Anadromous Fish Spawning Areas.** Work in waters of the U.S. designated by either the North Carolina Division of Marine Fisheries (NCDMF) or the North Carolina Wildlife Resources Commission (NCWRC) as anadromous fish spawning areas are prohibited from February 15th through June 30th, without prior written approval from the Corps and the appropriate wildlife agencies (NCDMF, NCWRC and/or the National

Marine Fisheries Service (NMFS)). Work in waters of the U.S. designated by NCWRC as primary nursery areas in inland waters are prohibited from February 15th through September 30th, without prior written approval from the Corps and the appropriate wildlife agencies. Work in waters of the U.S. designated by NCDMF as primary nursery areas shall be coordinated with NCDMF prior to being authorized by this NWP. Coordination with NCDMF may result in a required construction moratorium during periods of significant biological productivity or critical life stages.

2. **Trout Waters Moratorium.** Work in waters of the U.S. in the designated trout watersheds of North Carolina are prohibited from October 15th through April 15th without prior written approval from the NCWRC, or from the Eastern Band of Cherokee Indians (EBCI) Fisheries and Wildlife Management (FWM) office if the project is located on EBCI trust land. (See Section C.3. above for information on the designated trout watersheds).

3. **Sturgeon Spawning Areas.** No in-water work shall be conducted in waters of the U.S. designated by the National Marine Fisheries Service as Atlantic sturgeon critical habitat from February 1st through June 30th. No in-water work shall be conducted in waters of the U.S. in the Roanoke River designated as Atlantic sturgeon critical habitat from February 1st through June 30th, and August 1st through October 31st, without prior written approval from NMFS.

4. **Submerged Aquatic Vegetation.** Impacts to Submerged Aquatic Vegetation (SAV) are not authorized by any NWP, except NWP 48, NWP 55 and NWP 56, unless Essential Fish Habitat (EFH) consultation has been completed pursuant to the Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act). Permittees shall submit a PCN (See NWP General Condition 32) to the District Engineer prior to commencing the activity if the project would affect SAV. The permittee may not begin work until notified by the Corps that the requirements of the Magnuson-Stevens Act have been satisfied and that the activity is verified.

B. REGIONAL CONDITIONS APPLICABLE TO ALL NWP's

1. **Critical Habitat in Western NC.** For proposed activities within waters of the U.S. that require a Pre-Construction Notification (PCN) and are located in the thirteen counties listed below, permittees must provide a copy of the PCN to the U.S. Fish and Wildlife Service (USFWS), 160 Zillicoa Street, Asheville, North Carolina 28801 and the Corps Asheville Regulatory Field Office. Please see General Condition 18 for specific PCN requirements related to the Endangered Species Act and the below website for information on the location of designated critical habitat.

Counties with tributaries that drain to designated critical habitat that require notification to the Asheville U.S. Fish and Wildlife Service: Avery, Cherokee, Graham, Haywood, Henderson, Jackson, Macon, Mecklenburg, Mitchell, Swain, Transylvania, Union and Yancey.

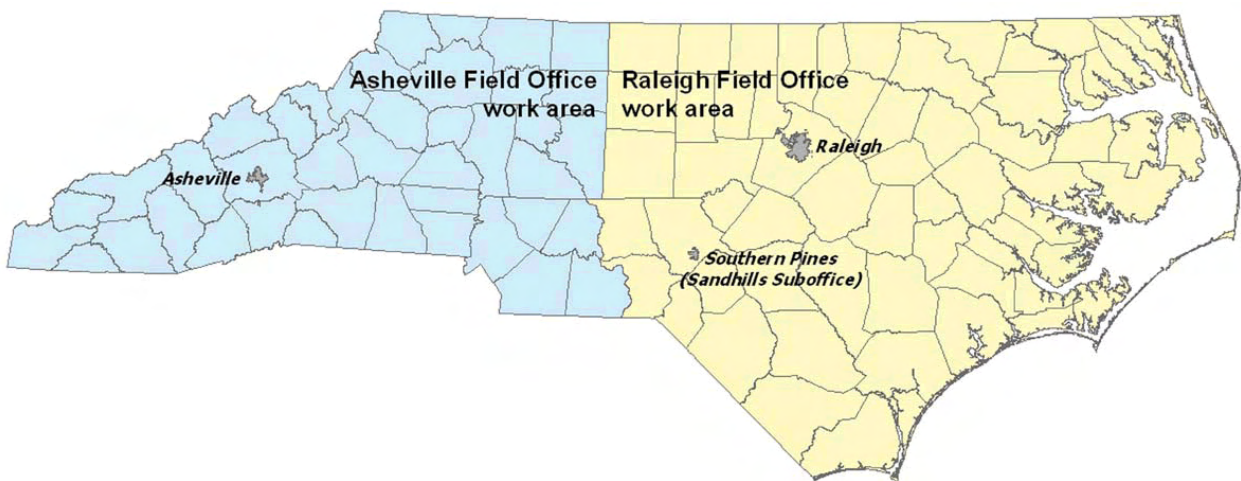
Website and office addresses for Endangered Species Act Information:

The Wilmington District has developed the following website for permittees which provides guidelines on how to review linked websites and maps in order to fulfill NWP General Condition 18 (Endangered Species) requirements:

<http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/AgencyCoordination/ESA.aspx>.

Permittees who do not have internet access may contact the appropriate U.S. Fish and Wildlife Service offices listed below or Corps at (910) 251-4850.

Below is a map of the USFWS Field Office Boundaries:



Asheville U.S. Fish and Wildlife Service Office counties: All counties west of and including Anson, Stanly, Davidson, Forsythe and Stokes Counties.

U.S. Fish and Wildlife Service
Asheville Field Office
160 Zillicoa Street
Asheville, NC 28801
Telephone: (828) 258-3939

Raleigh U.S. Fish and Wildlife Service Office counties: All counties east of and including Richmond, Montgomery, Randolph, Guilford, and Rockingham Counties.

U.S. Fish and Wildlife Service
Raleigh Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
Telephone: (919) 856-4520

2. **Special Designation Waters.** Prior to the use of any NWP that involves a discharge of dredged or fill material in any of the following identified waters and/or adjacent wetlands in North Carolina, permittees shall submit a PCN to the District Engineer prior to commencing the activity (see General Condition 32). The North Carolina waters and wetlands that require additional PCN requirements are:

“Primary Nursery Areas” (PNA), including inland PNA, as designated by the North Carolina Marine Fisheries Commission and/or the North Carolina Wildlife Resources Commission. The definition of and designated PNA waters can be found in the North Carolina State Administrative Code at Title 15A, Subchapters 3R and 10C (15A NCAC 03R .0103; 15A NCAC 10C .0502; and 15A NCAC 10C .0503) and at the following web pages:

- <http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2003%20-%20marine%20fisheries/subchapter%20r/15a%20ncac%2003r%20.0103.pdf>
- <http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2010%20-%20wildlife%20resources%20and%20water%20safety/subchapter%20c/15a%20ncac%2010c%20.0502.pdf>
- <http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2010%20-%20wildlife%20resources%20and%20water%20safety/subchapter%20c/15a%20ncac%2010c%20.0503.pdf>

3. **Trout Waters.** Prior to any discharge of dredge or fill material into streams, waterbodies or wetlands within the 294 designated trout watersheds of North Carolina, the permittee shall submit a PCN (see General Condition 32) to the District Engineer prior to commencing the activity. The permittee shall also provide a copy of the PCN to the appropriate NCWRC office, or to the EBCI FWM Office (if the project is located on EBCI trust land), to facilitate the determination of any potential impacts to designated Trout Waters.

NCWRC and NC Trout Watersheds:

NCWRC Contact**	Counties that are entirely within Trout Watersheds*	Counties that are partially within Trout Watersheds*
<p>Mountain Coordinator 645 Fish Hatchery Rd., Building B Marion, NC 28752 828-803-6054</p> <p>For NCDOT Projects:</p> <p>NCDOT Coordinator 12275 Swift Rd. Oakboro, NC 28129 704-984-1070</p>	<p>Alleghany Jackson Ashe Macon Avery Swain Graham Transylvania Haywood Watauga</p>	<p>Burke McDowell Buncombe Mitchell Caldwell Polk Cherokee Rutherford Clay Surry Henderson Wilkes Madison Yancey</p>
EBCI Contact**	Counties that are within Trout Watersheds*	
<p>Office of Natural Resources P.O. Box 1747, Cherokee, NC 28719 (828) 359-6113</p>	<p>Qualla Boundary and non-contiguous tracts of trust land located in portions of Swain, Jackson, Haywood, Graham and Cherokee Counties.</p>	

*NOTE: To determine PCN requirements, contact the Corps Asheville Regulatory Field Office at (828) 271-7980 or view maps showing trout watersheds in each County at the following webpage:
[http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Trout/.](http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Trout/)

**If a project is located on EBCI trust land, submit the PCN in accordance with Regional Condition C.16. Contact the Corps Asheville Regulatory Field Office at (828) 271-7980 with questions.

4. **Western NC Waters and Corridors.** The permittee shall submit a PCN (see General Condition 32) to the District Engineer prior to commencing the activity in waters of the U.S. if the activity will occur within any of the following identified waters in western North Carolina, within 0.5 mile on either side of these waters, or within 0.75 mile of the Little Tennessee River, as measured from the top of the bank of the respective water (i.e., river, stream, or creek):

Brasstown Creek
Burningtown Creek
Cane River
Caney Fork
Cartoogechaye Creek
Chattooga River
Cheoah River
Covee Creek
Cullasaja River
Deep Creek
Ellijay Creek
French Broad River
Garden Creek
Hiwassee River
Hominy Creek
Iotla Creek
Little Tennessee River (within the river or within 0.75 mile on either side of this river)
Nantahala River
Nolichucky River
North Fork French Broad River
North Toe River
Nottley River
Oconaluftee River (portion not located on trust/EBCI land)
Peachtree Creek
Shooting Creek
Snowbird Creek
South Toe River
Stecoah Creek
Swannanoa River
Sweetwater Creek
Tuckasegee River (also spelled Tuckaseegee or Tuckaseigee)
Valley River
Watauga Creek
Watauga River
Wayah Creek

West Fork French Broad River

To determine PCN requirements, contact the Corps Asheville Regulatory Field Office at (828) 271-7980 or view maps for all corridors at the following webpage:

<http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Designated-Special-Waters.aspx> .

5. **Limitation of Loss of Stream Bed.** NWP's may not be used for activities that may result in the loss of more than 0.05 acres of stream bed, except for NWP 32.

6. **Pre-Construction Notification for Loss of Stream Bed Exceeding 0.02 acres.**

The permittee shall submit a PCN to the District Engineer prior to commencing the activity (see General Condition 32) prior to the use of any NWP for any activity that results in the loss of more than 0.02 acres of stream bed. This applies to NWP's that do not have PCN requirements as well as those NWP's that require a PCN.

7. **Mitigation for Loss of Stream Bed.** For any NWP that results in a loss of more than 0.02 acres of stream bed, the permittee shall provide a mitigation proposal to compensate for more than minimal individual and cumulative adverse impacts to the aquatic environment, unless the District Engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal. For stream bed losses of 0.02 acres or less that require a PCN, the District Engineer may determine, on a case-by-case basis, that compensatory mitigation is required to ensure that the activity results in minimal adverse effect on the aquatic environment.

8. **Riprap.** For all NWP's that allow for the use of riprap material for bank stabilization, the following conditions shall be applied:

a. Filter cloth must be placed underneath the riprap as an additional requirement of its use in North Carolina waters. The placement of filter fabric is not required if the riprap will be pushed or "keyed" into the bank of the waterbody. A waiver from the specifications in this Regional Condition must be requested in writing.

b. Riprap shall be placed only on the stream banks, or, if it is necessary to be placed in the stream bed, the finished top elevation of the riprap should not exceed that of the original stream bed.

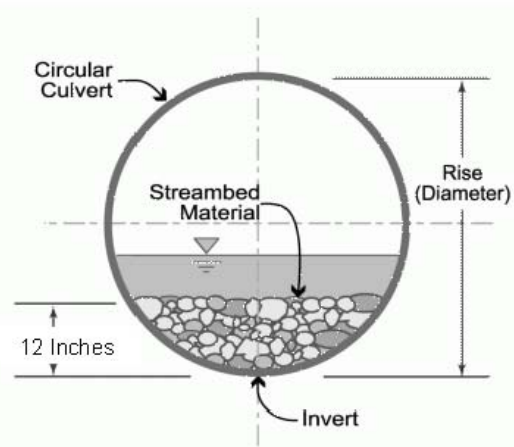
9. **Culvert Placement.** For all NWP's that allow for culvert placement, the following conditions shall be applied:

a. For all NWP's that involve the construction/installation of culverts, measures shall be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms

Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches. If the culvert outlet is submerged within a pool or scour hole and designed to provide for aquatic passage, then culvert burial into the streambed is not required.

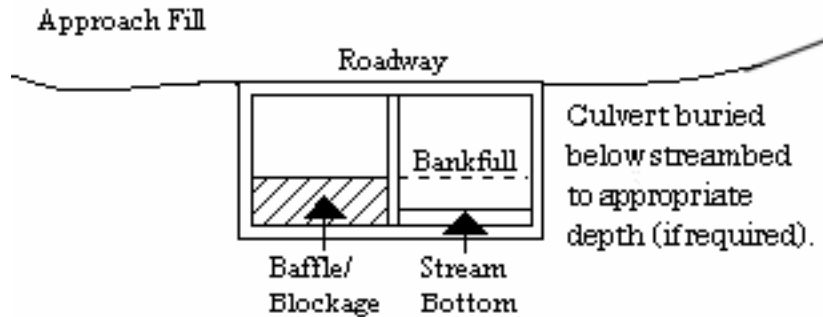
Culvert burial is not required for structures less than 72 inch diameter/width, where the slope of the culvert will be greater than 2.5%, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g., rock ladders, cross vanes, sills, baffles etc.). Culvert burial is not required when bedrock is present in culvert locations.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.



A waiver from the depth specifications in this condition may be requested, in writing, by the permittee and issued by the Corp. This waiver request must be specific as to the reasons(s) for the request. The waiver will be issued if it can be demonstrated that the proposed design would result in less impacts to the aquatic environment. Culverts placed across wetland fills purely for the purposes of equalizing surface water do not have to be buried, but the culverts must be of adequate size and/or number to ensure unrestricted transmission of water.

b. Bank-full flows (or less) shall be accommodated through maintenance of the existing bank-full channel cross sectional area. Additional culverts or culvert barrels at such crossings shall be allowed only to receive bank-full flows.



c. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. If the width of the culvert is wider than the stream channel, the culvert shall include multiple boxes/pipes, baffles, benches and/or sills to maintain the natural width of the stream channel. If multiple culverts/pipes/barrels are used, low flows shall be accommodated in one culvert/pipe and additional culverts/pipes shall be installed such that they receive only flows above bankfull.

10. **Utility Lines.** For all NWP's that allow for the construction and installation of utility lines, the following conditions shall be applied:

a. Utility lines consisting of aerial electric power transmission lines crossing navigable waters of the U.S. (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i).

b. The work area authorized by this permit, including temporary and/or permanent fills, will be minimized to the greatest extent practicable. Justification for work corridors exceeding forty (40) feet in width is required and will be based on pipeline diameter and length, size of equipment required to construct the utility line, and other construction information deemed necessary to support the request. The permittee is required to provide this information to the Corps with the initial PCN package.

c. A plan to restore and re-vegetate wetland areas cleared for construction must be submitted with the required PCN. Cleared wetland areas shall be re-vegetated, as appropriate, with species of canopy, shrub, and herbaceous species. The permittee shall not use fescue grass or any other species identified as invasive or exotic species by the NC Native Plant Society (NCNPS): <https://ncwildflower.org/invasive-exotic-species-list/>.

d. Any permanently maintained corridor along the utility right of way within forested wetlands shall be considered a loss of aquatic function. A compensatory mitigation plan will be required for all such impacts associated with the requested activity if the activity requires a PCN and the cumulative total of permanent conversion of forested wetlands

exceeds 0.1 acres, unless the District Engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal.

Where permanently maintained corridor within forested wetlands is 0.1 acres or less, the District Engineer may determine, on a case-by-case basis, that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment.

e. When directional boring or horizontal directional drilling (HDD) under waters of the U.S., including wetlands, permittees shall closely monitor the project for hydraulic fracturing or “fracking.” Any discharge from hydraulic fracturing or “fracking” into waters of the U.S., including wetlands, shall be reported to the appropriate Corps Regulatory Field Office within 48 hours. Restoration and/or compensatory mitigation may be required as a result of any unintended discharges.

11. **Temporary Access Fills.** The permittee shall submit a PCN to the District Engineer prior to commencing the activity if the activity will involve the discharge of dredged or fill material into more than 0.1 acres of wetlands or 0.02 acres of stream channel for the construction of temporary access fills and/or temporary road crossings. The PCN must include a restoration plan that thoroughly describes how all temporary fills will be removed, how pre-project conditions will be restored, and include a timetable for all restoration activities.

12. **Federal Navigation Channel Setbacks.** Authorized structures and fills located in or adjacent to Federally authorized waterways must be constructed in accordance with the latest setback criteria established by the Wilmington District Engineer. You may review the setback policy at <http://www.saw.usace.army.mil/Missions/Navigation/Setbacks.aspx>. This general permit does not authorize the construction of hardened or permanently fixed structures within the Federally Authorized Channel Setback, unless the activity is approved by the Corps. The permittee shall submit a PCN (see General Condition 32) to the District Engineer to obtain a written verification prior to the construction of any structures or fills within the Federally Authorized Channel Setback.

13. **Northern Long-eared Bat – Endangered Species Act Compliance**

The Wilmington District, U.S. Army Corps of Engineers has consulted with the United States Fish and Wildlife Service (USFWS) in regard to the threatened Northern long-eared bat (NLEB) (*Myotis septentrionalis*) and Standard Local Operating Procedures for Endangered Species (SLOPES) have been approved by the Corps and the USFWS. This condition concerns effects to the NLEB only and does not address effects to other federally listed species and/or federally designated critical habitat.

A. Procedures when the Corps is the lead federal* agency for a project:

The permittee must comply with (1) and (2) below when:

- the project is located in the western 41 counties of North Carolina, to include non-federal aid North Carolina Department of Transportation (NCDOT) projects, OR;
- the project is located in the 59 eastern counties of North Carolina and is a non-NCDOT project.

*Generally, if a project is located on private property or on non-federal land, and the project is not being funded by a federal entity, the Corps will be the lead federal agency due to the requirement to obtain Department of the Army authorization to impact waters of the U.S. If the project is located on federal land, contact the Corps to determine the lead federal agency.

(1) A permittee using an NWP must check to see if their project is located in the range of the NLEB by using the following website:
<http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>. If the project is within the range of the NLEB, or if the project includes percussive activities (e.g., blasting, pile driving, etc.), the permittee is then required to check the appropriate website in the paragraph below to discover if their project:

- is located in a 12-digit Hydrologic Unit Code area (“red HUC” - shown as red areas on the map), AND/OR;
- involves percussive activities within 0.25 mile of a red HUC.

Red HUC maps - for the western 41 counties in NC (covered by the Asheville Ecological Services Field Office), check the project location against the electronic maps found at: http://www.fws.gov/asheville/htmls/project_review/NLEB_in_WNC.html. For the eastern 59 counties in NC (covered by the Raleigh Ecological Services Field Office), check the project location against the electronic maps found at: https://www.fws.gov/raleigh/NLEB_RFO.html.

(2) A permittee must submit a PCN to the District Engineer, and receive written verification from the District Engineer, prior to commencing the activity, if the activity will involve any of the following:

- tree clearing/removal and/or, construction/installation of wind turbines in a red HUC, AND/OR;
- bridge removal or maintenance, unless the bridge has been inspected and there is no evidence of bat use, (applies anywhere in the range of the NLEB), AND/OR;
- percussive activities in a red HUC, or within 0.25 mile of a red HUC.

The permittee may proceed with the activity without submitting a PCN to either the Corps or the USFWS, provided the activity complies with all applicable NWP terms and

general and regional conditions, if the permittee's review under A.(1) and A.(2) above shows that the project is:

- located outside of a red HUC (and there are no percussive activities), and the activity will NOT include bridge removal or maintenance, unless the bridge has been inspected and there is no evidence of bat use, OR;
- located outside of a red HUC and there are percussive activities, but the percussive activities will not occur within 0.25-mile of a red HUC boundary, and the activity will NOT include bridge removal or maintenance, unless the bridge has been inspected and there is no evidence of bat use, OR;
- located in a red HUC, but the activity will NOT include tree clearing/removal; construction/installation of wind turbines; bridge removal or maintenance, unless the bridge has been inspected and there is no evidence of bat use, and/or; any percussive activities.

B. Procedures when the USACE is not the lead federal agency:

For projects where another federal agency is the lead federal agency - if that other federal agency has completed project-specific ESA Section 7(a)(2) consultation for the NLEB, and has (1) determined that the project would not cause prohibited incidental take of the NLEB, and (2) completed coordination/consultation that is required by the USFWS (per the directions on the respective USFWS office's website), that project may proceed without PCN to either the USACE or the USFWS, provided all General and Regional Permit Conditions are met.

The NLEB SLOPES can be viewed on the USACE website at:

<http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/ESA/>. Permittees who do not have internet access may contact the USACE at (910) 251- 4633.

14. **West Indian Manatee Protection.** In order to protect the endangered West Indian manatee (*Trichechus manatus*) the Permittee shall implement the USFWS' Manatee Guidelines, and strictly adhere to all requirements therein. The guidelines can be found at <https://www.fws.gov/raleigh/pdfs/ManateeGuidelines2017.pdf>.

15. **ESA Programmatic Biological Opinions.** The Wilmington District, USFWS, NCDOT, and the FHWA have conducted programmatic Section 7(a)(2) consultation for a number of federally listed species and designated critical habitat (DCH), and programmatic consultation concerning other federally listed species and/or DCH may occur in the future. The result of completed programmatic consultation is a Programmatic Biological Opinion (PBO) issued by the USFWS. These PBOs contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" of whichever species or critical habitat is covered by a specific PBO. Authorization under NWP is conditional upon the permittee's compliance with all the mandatory terms and conditions associated with incidental take of the applicable PBO (or PBOs), which are incorporated by reference in

the NWP. Failure to comply with the terms and conditions associated with incidental take of an applicable PBO, where a take of the federally listed species occurs, would constitute an unauthorized take by the permittee, and would also constitute permittee non-compliance with the authorization under the NWP. If the terms and conditions of a specific PBO (or PBOs) apply to a project, the Corps will include this/these requirements in any NWP verification that may be issued for a project. For an activity/project that does not require a PCN, the terms and conditions of the applicable PBO(s) also apply to that non-notifying activity/project. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its PBO and the ESA. All PBOs can be found on our website at:

<https://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/ESA/>.

16. Work on Eastern Band of Cherokee Land.

Notifying NWPs - All PCNs submitted for activities in waters of the U.S. on Eastern Band of Cherokee Indians (EBCI) trust land (i.e., Qualla Boundary and non-contiguous tracts of trust land located in portions of Swain, Jackson, Haywood, Graham and Cherokee Counties), must comply with the requirements of the latest MOU between the Wilmington District and the EBCI.

Non-notifying NWPs - Prior to the use of any non-notifying NWP for activities in waters of the U.S. on EBCI trust land (i.e., Qualla Boundary and non-contiguous tracts of trust land located in portions of Swain, Jackson, Haywood, Graham and Cherokee Counties), all prospective permittees must comply with the requirements of the latest MOU between the Wilmington District and the EBCI; this includes coordinating the proposed project with the EBCI Natural Resources Program and obtaining a Tribal Approval Letter from the Tribe.

The EBCI MOU can be found at the following URL: <http://saw-reg.usace.army.mil/FO/Final-MOU-EBCI-USACE.pdf>

17. Sedimentation and Erosion Control Structures and Measures

All PCNs will identify and describe sedimentation and erosion control structures and measures proposed for placement in waters of the U.S. The structures and measures should be depicted on maps, surveys or drawings showing location and impacts to jurisdictional wetlands and streams.

C. SECTION 401 WATER QUALITY CERTIFICATION (WQC) AND/OR COASTAL ZONE MANAGEMENT ACT (CZMA) CONSISTENCY DETERMINATION SUMMARY AND APPLICABLE CONDITIONS

The CZMA Consistency Determination and all Water Quality Certifications for the NWPs can be found at: <https://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Permits/2017-Nationwide-Permits/>

APPENDIX K

US Bureau of Mines RI 8507

