



**CONTRACT DOCUMENTS &
TECHNICAL SPECIFICATIONS**

PWC2223045

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

ISSUED FOR BID

MAY 2023

**Fayetteville Public Works Commission
Administrative Building
955 Old Wilmington Road
Fayetteville, NC 28301**

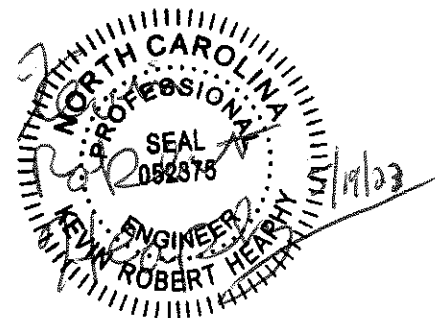


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August 23, 2021

SECTION A – PROJECT SPECIFICS GENERAL

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**ADVERTISEMENT FOR BID
FAYETTEVILLE PUBLIC WORKS COMMISSION
BUCKHEAD SUBDIVISION WATER MAIN LOOPING**

**Cumberland County
North Carolina**

Pursuant to N.C.G.S 143-129, sealed bids are solicited and will be received at Fayetteville Public Works Commission, Administration Building, Conference Room 107, 955 Old Wilmington Road, Fayetteville, NC 28301, until **2:00 p.m., EST Thursday, July 6, 2023,** at which time they will be publicly opened and read for construction of:

This project was initiated to provide the Buckhead Subdivision, located on the west side of Fayetteville, a second connection point to PWC's water system. Currently the subdivision is served by a single connection point at the intersection of Ferncreek Drive and Raeford Road. In the summer of 2025, during construction of Phase C of the NCDOT Raeford Road Widening Project (U-4405), the existing water main feeding the subdivision will be temporarily disconnected. Installation of this second connection point prior to road widening construction will ensure water service is maintained to this subdivision. The water main will be installed by horizontal directional drilling (HDD) between 4423 and 4427 Ferncreek Drive and will extend under an existing retaining wall behind 4423 Ferncreek Drive. The foregoing description shall not be construed as a complete description of all work required. All work shall be done in accordance with PWC technical specifications and standard contract terms.

The foregoing description shall not be construed as a complete description of all work required. All work shall be done in accordance with PWC technical specifications and standard contract terms.

A **MANDATORY** pre-bid meeting will be held at **2:00 p.m., EST Tuesday, June 13, 2023,** in the Skills Lab, Fayetteville Public Works Commission, Administrative Building, 955 Old Wilmington Road, Fayetteville, NC 28301. Representatives of the Owner and Engineer will be available to answer questions. Any formal bid submitted by a Bidder that fails to attend this meeting will be considered an unresponsive bid.

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

Bids must be enclosed in a sealed envelope addressed to Tanya Hazlett, Procurement Advisor, Fayetteville Public Works Commission, 955 Old Wilmington Road, Fayetteville, North Carolina 28301. The outside of the envelope must be marked **SEALED BID: BUCKHEAD SUBDIVISION WATER MAIN LOOPING** and shall indicate the name, address and state license number of the bidder. Bids shall be submitted on the printed forms, or exact copies thereof, contained in the Contract Documents.

Each bid shall be accompanied by 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 (10) days after the Notice of 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 followed as applicable in receiving and evaluating bids and in reading and awarding the Contract (Chapter 87 of the North Carolina General Statutes).

The license classification shall be:

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

Plans and Specifications including Contract Documents will be available online for viewing and downloading on or about **Monday, May 23, 2023**, on the PWC Procurement website at <https://www.faypwc.com/purchasing>. In addition, the documents will be available from the Fayetteville State University Construction Resource Office (FSU CRO) at <https://www.uncfsu.edu/academics/colleges-schools-and-departments/broadwell-college-of-business-and-economics/outreach-centers/construction-resource-office>. In collaboration with the North Carolina Institute of Minority Economic Development, the FSU CRO offers services and support to help small, minority, veteran, and women-owned businesses identify and compete for construction-related projects.

At the FSU CRO, potential bidders may:

- Research, view and print project drawings to scale free of charge;
- Use available software to prepare their bid; and
- Receive certification and pre-qualification assistance.

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

Plans and Specifications are also being furnished to ISQFT (www.isqft.com) for online posting. Purchase of the documents is not required to bid.

Fayetteville Public Works Commission reserves the right to reject any or all bids for any reason determined by PWC to be in its best interest, or to award the bid to the lowest responsible bidder or bidders, taking into consideration quality, performance, and the time specified in the bids 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 Section 143-129, as amended.

No bids may be withdrawn after the scheduled Bid Opening for a period of ninety (90) calendar days.

FAYETTEVILLE PUBLIC WORKS COMMISSION
Tanga Anderson-Solomon
Procurement Manager

**00100 - INSTRUCTIONS TO BIDDERS
FAYETTEVILLE PUBLIC WORKS COMMISSION
BUCKHEAD SUBDIVISION WATER MAIN LOOPING**

A. DEFINED TERMS

Terms used in these Instructions to Bidders are defined in the Definitions and Terminology sections of the PWC General Conditions.

B. COPIES OF BIDDING DOCUMENTS

1. Complete sets of the Bidding Documents as stated in the Invitation to Bidders, may be obtained from the PWC Procurement Department.
2. Complete sets of Bidding Documents shall be used in preparing Bids. PWC assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

C. EXAMINATION OF CONTRACT DOCUMENTS, OTHER RELATED DATA, AND PROJECT SITE

1. Before submitting a Bid, each Bidder shall (a) examine the Contract Documents thoroughly, (b) visit the site and become familiar with the site and any local conditions that may in any manner affect the cost, progress, or performance of the Work, (c) be familiar 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 Advisor written notice of all conflicts, errors or discrepancies in the Contract Documents.
2. Bidders should consult the 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 in the preparation of the Drawings and Specifications. PWC 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 a Bid, each Bidder will, at its own expense, make such investigations and tests as the Bidder may deem necessary to determine his Bid for the performance of the Work in accordance with the Contract Documents.
3. On request (minimum 48 hours advance notice), PWC will provide each Bidder access to the site to conduct such investigations and tests, as each Bidder deems necessary for submission of its Bid.
4. 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. The submission of a Bid constitutes an incontrovertible representation by the Bidder that it has complied with every requirement of this Section and that the Contract Documents are sufficient in scope and detail to indicate and convey an understanding of all terms and conditions for the performance of the Work.

D. INTERPRETATIONS AND ADDENDA

1. All questions about the meaning or intent of the bid or Contract Documents shall be submitted in writing to Tanya Hazlett, Procurement Advisor, by email to tanya.hazlett@faypwc.com. In order to receive consideration, questions must be received by Tuesday, June 20, 2023 time 5:00 p.m. Any interpretations of questions so raised, which in the opinion of the Project Engineer require interpretations, will be issued by Addenda via email or posted online by the Owner and/or Design Engineer. An Addendum extending the Bid Opening date may be issued up to five (5) business days before the Bid Opening date. An Addendum withdrawing the Invitation for Bid may be issued any time prior to the Bid Opening date. The 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.

2. PWC 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.
3. Each Bidder shall be responsible for determining that all Addenda issued by PWC have been received before submitting a Bid for the Work.
4. Each Bidder shall acknowledge the receipt of each Addendum on the Bid Form.

E. QUALIFICATION OF CONTRACTORS

1. **Bidder Qualification Form** – The Bid package shall include the completed Contractor Qualification Form and all supporting documentation.
2. **Statutory Requirements** – The Bidder shall comply with all federal, state, and local statutes, regulations, and codes as they relate to the Project. Failure to comply with these requirements shall be considered a breach of Contract.
3. Contractor to provide utility references for similar projects completed by identified crews.

F. SUBSTITUTE MATERIAL AND EQUIPMENT

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 PWC General Conditions.

G. CONTRACTOR'S LICENSE

1. No General Contractor shall engage in contracting work in the State of North Carolina unless it has been licensed under in accordance with North Carolina law.

2. 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 Fayetteville Public Works Commission without a North Carolina Contractor's License.
3. Each bidder shall indicate its North Carolina Contractor's License number on the bid envelope and the Bid Form.
4. License Classification shall be:
 - Public Utilities Water and Sewer: Unlimited
 - Unclassified: Unlimited

H. SUBCONTRACTORS

1. Contractor shall subcontract no more than 49 percent (49%) of the value of the Contract.
2. If the apparent Successful Bidder declines to make such a substitution, PWC may award the Contract to the next lowest responsive, responsible Bidder that proposes to use acceptable Subcontractors, Suppliers, and other persons, and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the bid security of any Bidder. If PWC does not make written objection to a Bidder's list of Subcontractors, Suppliers, other persons, or organizations prior to giving Notice of Award, the list will be considered acceptable, subject to revocation as provided in the PWC General Conditions.

I. SMALL LOCAL SUPPLIER (SLS) PROGRAM / SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

1. PWC is committed to promoting the utilization of small, local businesses in the Fayetteville Metropolitan Statistical Area (MSA) by increasing opportunities for those businesses to participate in PWC procurements. The MSA consists of Cumberland County, Hoke County, and Harnett County. PWC requires Bidders to report efforts to utilize Small Disadvantaged Business Enterprises (SDBEs) and Historically Underutilized Businesses (HUBs) for specific projects and encourages all Bidders to report all such efforts for SDBEs, HUBs, and small, local businesses regardless of the requirements of a specific project. Bidders should document any good-faith efforts and utilization in the SDBE forms provided within the Contract Documents.
2. NCDOT Disadvantaged Business Enterprise (DBE) and NC Department of Administration (DOA) Historically 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 any necessary 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>.
3. Bidder shall submit, with their bid, the SDBE documentation required in the Contract Documents. It is strongly recommended that the Bidder attend the Pre-Bid Meeting, as important information will be reviewed.

J. SUBMISSION OF BIDS

1. All Bidders shall use the enclosed Bid Forms, or exact copies thereof, in submitting their bid prices. PWC will not accept oral Bids or Bids received by telephone, email, or telecopier (FAX machine) for this Bid.
2. All prices must be F.O.B. delivered to the point as indicated by this Bid. PWC will grant no allowance for boxing, crating, or delivery unless specifically provided for in this Bid.
3. The Bid Form must be completed in black ink. Black or blue pen ink is acceptable if handwritten. 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.
4. Bid submittals sent by mail should be registered mail. The sealed Bid, marked as indicated above, should be enclosed in an additional sealed envelope similarly marked and addressed to:

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

5. Mark the 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.
6. Bids sent by mail and arriving after the time for the opening of Bids shall not be considered valid Bids. In such instances, the Bidders shall have no claim against PWC.
7. All items contained in the Bid 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 PWC.
8. 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 PWC as being incomplete or nonresponsive.
9. 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.
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.
11. All Bids received in the Procurement Department by the deadline indicated will be kept sealed until the time and date of the Bid Opening.

12. All late Bids shall be returned unopened to the sender.

K. BID BOND

1. Each Bid shall be accompanied by an acceptable Bid bond in the amount of five percent (5%) of the Bid amount, and made payable to Fayetteville Public Works Commission, North Carolina.
2. The Bid bond is a guarantee that if the contract is awarded by PWC to the Bidder, the Bidder shall enter into the contract with PWC for the work mentioned in this Bid or forfeit the Bid bond to PWC, not as a penalty, but as liquidated damages.
3. No forfeiture under a Bid bond shall exceed the lesser of (a) the difference between the Bid for which the Bid bond was written and the next low Bid of another Bidder, or (b) the face amount of the Bid bond.
4. 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 §44 A-26), and the bond shall be the same in both form as well as substance as AIA Document A310, Bid Bond.
5. 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.
6. The bond premium shall be paid by the Bidder and the cost shall be included in the Bid price.
7. Any inspection of procurement transaction records shall be subject to reasonable restrictions to ensure the security and integrity of the records.

L. OPENING OF BIDS

1. Bids will be opened publicly and read aloud on the date and time set for the Bid Opening in the Notice to Bidders.
2. 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 PWC decides not to accept any of the Bids and to reopen the contract. Otherwise, bid records shall be open to public inspection only after the award of the Contract.
3. Any inspection of procurement transaction records shall be subject to reasonable restrictions to ensure the security and integrity of the records.

M. MODIFICATION OF BIDS

1. A Bid may be modified or withdrawn by the Bidder at any time prior to the time and date set for the Bid Opening. The Bidder shall notify the PWC Procurement Department in writing of its intentions.
2. Modified and withdrawn Bids may be resubmitted to the PWC Procurement Department up to the time and date set for the Bid Opening.

N. WITHDRAWAL OF BID DUE TO ERROR

1. If the Bidder desires to withdraw its Bid, the Bidder must do so before the time fixed for the opening, without prejudice, by communicating its purpose in writing to PWC. After bids

are open, bids may only be withdrawn in strict accordance with N.C.G.S. Section 143-129-1

O. BIDS TO REMAIN OPEN

1. All Bids shall remain open for ninety (90) calendar days after the day of the Bid Opening.

P. ESTIMATED QUANTITIES

1. The estimated quantities contained herein in certain items in the Bid are for the purpose of comparing bids, and while they are believed to be close approximations, they are not guaranteed, and settlement will be made on the basis of the work as actually executed at the unit prices in the Bid as accepted. PWC further reserves the right to delete any single line item or combination of items from the bid and cannot guarantee that all quantities listed in the Contract Documents will be utilized.
2. The Contractor should verify quantities before submitting a bid. Due to conditions that may be found under pavement such as the accurate location of **existing water lines, sewer lines, gas lines, and structure services** of all types, quantities are subject to change during construction, but this contingency shall not be used for a claim to change unit prices submitted in the Bid.

Q. AWARD OF CONTRACT

1. PWC reserves the right to reject any and all Bids, to waive any and all informalities, and to disregard all nonconforming, nonresponsive, or conditional Bids. PWC reserves the right to request additional information from any or all bidders for evaluation purposes. Failure or refusal to furnish additional information as requested may result in the rejection of the bid.
2. In case of a tie Bid, the tie shall be decided by lot.
3. It is the intent of the PWC 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. In determining the lowest responsive Bidder, PWC may consider, among other criteria, the Bidder's past performance conduct on other contracts, and other information provided by the Bidder as noted below.
4. In determining the lowest responsive Bidder, PWC will evaluate the Bidder's proposed Bid price and the completeness of the submitted bid in accordance with the requirements of the Contract Documents.
5. PWC may consider the operating costs, maintenance considerations, performance date, and guarantees of materials and equipment.
6. PWC may conduct such investigations as deemed 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 PWC's satisfaction within the prescribed time.

7. PWC reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to PWC's satisfaction.
8. If the Contract is to be awarded, PWC will give the Successful Bidder a Notice of Award within ninety (90) days after the day of the Bid Opening.
9. The Bidder to whom the contract is awarded shall, within ten (10) days after prescribed documents are presented for signature, execute and deliver the Contract Documents and any other forms or bonds required by the Bid to PWC.
10. The Bidder is required to complete the attached forms that will allow PWC 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 PWC to reject the bid.

PWC will review all of the bids and qualification data to determine the lowest responsive, responsible Bidder. PWC 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 PWC, or has been falsified. PWC will not request any additional information in order to allow the Contractor to complete bid.

11. During the evaluation phase, bid submittals will be reviewed to ascertain which bids technically and otherwise address all the requirements of these Contract Documents. Bid submittals determined to be technically non-responsive or not sufficiently responsive may be disqualified.

The Bidder shall address each of the Evaluation Criteria as requested in the Technical Evaluation Criteria Form located within Section A Project Specifics Bid Submittal Documents. To be considered substantive, the information must respond to all requirements.

12. PWC may conduct such investigations/verifications as deemed necessary to establish the responsibility, qualification and financial ability of the Bidder. Should PWC find that the apparent low bidder is not the lowest responsive, responsible bidder by integrity of the information furnished, said apparent low bidder will be so notified and its bid bond shall be returned 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.

R. TAXES

1. 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.
2. Said taxes shall not be in addition to the contract price between PWC and the Successful Bidder. The taxes shall be an obligation of the Successful Bidder and not of PWC. PWC shall be held harmless from same by the Successful Bidder.

S. PERFORMANCE AND OTHER BONDS

1. The PWC General Conditions set forth PWC's requirements as to Performance and other Bonds.

T. E-VERIFY REQUIREMENTS

1. 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.
2. 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 NCGS §64-26(a).
3. 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 any subcontractors currently employed by or subsequently hired by Contractor shall comply with any and all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement.

U. IRAN DIVESTMENT ACT

1. As mandated by N.C.G.S. 147-86.59(a), the Contractor 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 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 certifies that the signatory to this Purchase Order authorized by the Contractor to make the foregoing statement.

*** END OF SECTION ***

**SECTION A – PROJECT SPECIFICS
BID SUBMITTAL DOCUMENTS**

**BID SCHEDULE – PERFORMANCE AND DELIVERY
FAYETTEVILLE PUBLIC WORKS COMMISSION
BUCKHEAD SUBDIVISION WATER MAIN LOOPING**

Pre-Bid Meeting:	2:00 p.m., Tuesday, June 13, 2023
(MANDATORY)	Fayetteville Public Works Commission Administrative Building Skills Lab 955 Old Wilmington Road Fayetteville, NC 28301
Deadline for Questions from Bidders ¹	5:00 p.m., Tuesday, June 20, 2023
Deadline for Addenda issued by PWC Procurement Department and Project Engineer ²	5:00 p.m., Tuesday, June 27, 2023
Bid Opening (Submittal Deadline)	2:00 p.m., Thursday, July 6, 2023
	Fayetteville Public Works Commission Administrative Building Conference Room 107 955 Old Wilmington Road Fayetteville, NC 28301
Contract Time:	June 30, 2024
Liquidated Damages:	\$1,000.00 per day for each day beyond the Final Completion Date
Bid Acceptance Period	Within ninety (90) Calendar Days unless otherwise noted

-
1. Questions regarding this bid must be submitted in writing to the attention of Tanya Hazlett, Procurement Advisor, by email to tanya.hazlett@faypwc.com.

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

2. Any addenda to these Contract Documents will be issued by the Project Engineer no later than the date and time stated above.

BID SUBMITTAL CHECKLIST

- 1. Enter Contractor's License Number where called for in the Bid Form and on the outside of the sealed envelope containing the Bid.
- 2. Photocopy of Contractor's License.
- 3. Bid Bond
- 4. Bid Forms Section 00300.
- 5. Provide the responsible North Carolina Registered Agent for Insurance Claims. Include contact information.
- 6. Provide the proposed responsible Bonding Company name. Include contact information.
- 7. List of proposed Subcontractors and material suppliers exceeding 5% of the Contract Value.
- 8. Non-Collusive Affidavit.
- 9. Nondiscrimination Clause.
- 10. Affidavit of Organization and Authority and Sworn Statement.
- 11. Equal Employment Opportunity Acknowledgment.
- 12. Certification regarding Debarment, Proposed Debarment, and other Responsible Matters.
- 13. FTA Certification Regarding Lobbying.
- 14. Identification of Minority Business Participation Form.
- 15. Affidavit A – Listing of Good Faith Efforts, et al.
- 16. Affidavit B – (Only if the Contractor will perform **ALL ELEMENTS OF THE WORK** on this project with their own forces **AND** will complete **ALL ELEMENTS OF THIS PROJECT WITHOUT THE USE OF SUBCONTRACTORS, MATERIAL SUPPLIERS, OR PROVIDERS OF PROFESSIONAL SERVICES.**
- 17. The Completed Contractor Qualification Form.

****FAILURE TO SUBMIT THE ABOVE FORMS WITH THE BID FORM MAY BE JUST CAUSE FOR REJECTION OF THE BID BY THE OWNER****

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00300 - BID FORM

TO: **Fayetteville Public Works Commission**
Attn: Tanya Hazlett, Procurement Advisor
955 Old Wilmington Road
Fayetteville, North Carolina 28301

PROJECT: **BUCKHEAD SUBDIVISION WATER MAIN LOOPING**

FROM: BIDDER _____

ADDRESS _____

DATE OF BID _____, 20 ____

- 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 (as that term is defined in the Construction Agreement) 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) calendar 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 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, 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 these Contract Documents. Geotechnical Reports and other information regarding subsurface conditions are identified in the attached appendices and detailed in Article V of the PWC 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, it 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 Price will 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 next page.

BID PRICING FORM

Line Item #	Reference to Section 01025 Measurement & Payment Description	Estimated Quantity	Unit	Unit Price	Extended Price
INCIDENTAL ITEMS					
1	1.01 Mobilization	1	L.S.		
2	1.02 Traffic Plan and Traffic Control	1	L.S.		
3	1.03 Erosion & Sedimentation Control	1	L.S.		
4	1.04 Clearing & Grubbing	0.2	Ac.		
5	1.05 Select Material (Backfill)	50	C.Y.		
6	1.06 Remove & Replace Curb & Gutter – Concrete	10	L.F.		
7	1.07 Permanent Asphalt Patch	10	S.Y.		
8	1.08 Permanent Seeding	.2	A.C.		
9	1.09 Permanent Sod	220	S.Y.		
BASE WATER CONSTRUCTION ITEMS					
10	2.01 Furnish and Install Water Main by Horizontal Directional Drill – 8” Fusible C900 PVC	1	L.S		
11	2.03 Furnish and Install Water Main by Open Trench – 8” Restrained Joint Ductile Iron	172	L.F.		
12	2.03 Furnish and Install Water Main by Open Trench – 12” Restrained Joint Ductile Iron	5	L.F.		
13	2.04 Furnish and Install Water Main by Direct Bore – 8” Restrained Joint Ductile Iron	20	L.F.		
14	2.05 Furnish and Install New Tapping Sleeve & Valve – 8”x8”	1	Ea.		
15	2.06 Furnish and Install New Gate Valve – 12”	1	Ea.		
16	2.07 Sterilization and Testing – Water	385	L.F.		
ALTERNATE WATER CONSTRUCTION ITEMS					
17	2.02 Furnish and Install Water Main by Horizontal Directional Drill – 10” DR9 HDPE	1	L.S		
18	2.03 Furnish and Install Water Main by Open Trench – 8” Restrained Joint Ductile Iron	122	L.F.		
19	2.03 Furnish and Install Water Main by Open Trench – 12” Restrained Joint Ductile Iron	5	L.F.		
20	2.04 Furnish and Install Water Main by Direct Bore – 8” Restrained Joint Ductile Iron	20	L.F.		
21	2.05 Furnish and Install New Tapping Sleeve & Valve – 8”x8”	1	Ea,		
22	2.06 Furnish and Install New Gate Valve – 12”	1	Ea.		
23	2.07 Sterilization and Testing – Water	385	L.F.		
ALLOWANCES					
24	3.01 Contingency	1	L.S.		

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.

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

1. All work described herein to be complete, including restoration and all punch list items from Notice to Proceed until June 30, 2024.
2. 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. The Bidder agrees to diligently pursue all available work and complete all work in an expeditious manner.

B. 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.

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

D. The terms used in this Bid which are defined in Definitions and Terminology Section of the PWC General Conditions or as otherwise specifically defined in the Contract Documents have the meanings assigned to them therein, which are incorporated by reference as if fully set forth herein.

E. 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 Fayetteville Public Works Commission. Please indicate this information on this Bid Form as follows:

Social Security Number: _____

Federal Employer Identification Number: _____

SUBMITTED ON ____ day of _____ 2023

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 _____ 2023

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 _____ 2023

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 _____ 2023

NOTARY PUBLIC
My Commission Expires: _____

A JOINT VENTURE

BY: _____
(Name and Signature)

Doing Business as: _____

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this ____ day of _____ 2023

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.)

CONTRACTOR QUALIFICATION FORM

BUCKHEAD SUBDIVISION WATER MAIN LOOPING PROJECT CONTRACTOR QUALIFICATION FORM

*****MUST BE COMPLETED AND INCLUDED WITH BID*****

Fayetteville Public Works Commission 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.

CONTRACTOR DOCUMENTATION

(1) Name of Prime Contractor and NC License Number:	Name: NC License No.:		
a. Within the last five (5) years , has the contractor been involved in any judgments, claims, or arbitration with regard to construction contracts? If so, provide list and describe each event fully. Attach additional information, as necessary.	<input type="checkbox"/> Yes (provide list and describe each event fully) <input type="checkbox"/> No		
b. 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? If so, provide list and describe each event fully. Attach additional information, as necessary.	<input type="checkbox"/> Yes (provide list and describe each event fully) <input type="checkbox"/> No		
c. Provide documentation (to be submitted with the Bid) that the Contractor and Lining Material Manufacturer (both cement and polymeric materials) have been in business a minimum of 10 years under the same business entity name.			
(2) Provide list of Subcontractors and field of specialty (erosion control, access, etc.), if applicable. Additional subcontractors can be attached to the qualifications form, if necessary.			
a. Subcontractor Name: Specialty:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td></tr> </table>		
b. Subcontractor Name: Specialty:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td></tr> </table>		
c. Subcontractor Name: Specialty:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td></tr> </table>		

BUCKHEAD SUBDIVISION WATER MAIN LOOPING PROJECT CONTRACTOR QUALIFICATION FORM

*****MUST BE COMPLETED AND INCLUDED WITH BID*****

Fayetteville Public Works Commission 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.

d. Subcontractor Name:	
Specialty:	

PRIME CONTRACTOR EXPERIENCE AND RESOURCES

- (1) The Contractor shall have a minimum of **six (6)** years active experience in commercial installation of the product. The Contractor shall provide not less than **four (4)** references documenting a minimum of 800 manholes (combined between references), with a minimum of **four (4)** years of service in the ground, of successful installation of the proposed lining system within the United States. The Contractor shall have completed a minimum of **four (4)** separate lining projects within the previous **five (5)** years. These projects shall be of similar scope and nature to the Work described in these Contract Documents. A minimum of **one (1)** project shall include a minimum of 300 manholes completed within **one (1)** calendar year (or a period less than 365 days), this project shall have been completed in the Southeast United States (SC, NC, VA). The Contractor shall have completed a minimum of **three (3)** years of continuous experience on similar spray applications and/or trowel type underlayment projects.
- (2) Include the dates of such projects. The client's representative, name, and telephone numbers shall be provided for reference of each project listed. Contractor shall provide references for Fayetteville Public Works Commission to verify project information. Each project should be from separate references. Additional similar projects may be attached at the Contractor's discretion.

a. Project Name:			
Location:			
Superintendent:			
Cost:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			

b. Project Name:			
Location:			
Superintendent:			

Cost:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			
c. Project Name:			
Location:			
Superintendent:			
Cost:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			
d. Project Name:			
Location:			
Superintendent:			
Cost:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			
e. Project Name:			
Location:			
Superintendent:			
Cost:			

Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			
(3) Provide the number of crews qualified and available to perform the work stated in this Proposal:			
(4) Provide the name of the proposed superintendent (list only one (1)) and proposed crew leaders who are qualified and available to perform the work stated in this proposal:	Proposed Superintendent (list only one (1)):		
	Crew leaders/foreman:		
<p>(5) The Contractor's superintendent (named above) shall have been responsible for or managed projects similar in size to this proposed project, in the past four (4) years in the United States. The Contractor shall provide a minimum of five (5) references, to document the proposed superintendent's ability and qualifications to meet this requirement. Each reference should be from separate projects. A minimum of one (1) project shall include a minimum of 200 manholes completed within one (1) calendar year (or a period less than 365 days) and completed in the southeast United States (NC, SC, VA). Additional similar projects may be attached at the Contractor's discretion.</p> <p><u>**The number of structures in the following Superintendent's References DO NOT COUNT towards the Prime Contractors' total numbers above.**</u></p>			
a. Project Name:			
Location:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			
b. Project Name:			
Location:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	

Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			
c. Project Name:			
Location:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			

d. Project Name:			
Location:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			

e. Project Name:			
Location:			
Types of Structures:		# Of Structures	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Scope/Additional Information:			

(6) Provide a list of applicable equipment (including make/model/size/quantity) <u>owned by the prime contractor</u> that will be utilized to complete the scope of work:	
a. Lining equipment:	
b. Cleaning equipment:	
c. Other Lining Support Equipment:	
(1) The Contractor shall be certified and/or licensed as an installer by the manufacturer of the proposed lining system. The Contractor shall submit a certified statement from the manufacturer that they are a certified and/or licensed installer of the lining material.	
(2) All manufacturers of the proposed lining system shall be certified for the proposed lining system for the design, production, installation, and service of the lining system for a sanitary sewer collection system, and shall submit proof of certification.	
(3) The Contractor certifies that they will have a minimum of two (2) crews available to complete the work that may be assigned during each contract period.	

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

Submitted By (print):	Date:
Title:	
Company:	
Signature:	

BID BOND

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 _____ (1)

_____ (2)

The name of the SURETY is _____

Fayetteville Public Works Commission, Fayetteville, North Carolina is the OWNER

The amount of the Bond is _____

_____ (Dollars) (\$ _____)

KNOW BY 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:

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

NOW, THEREFORE

- (a) If said Bid shall be rejected, or in the alternate,
- (b) 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 therewith, and shall in all other respects perform the agreement created by the 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 stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which 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 hereunto 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: _____ (3)

(Address)

Witness as to Principal

Surety

(Address)

(Address)

ATTEST:

N.C. Resident Agent
(SEAL)

Witness as to Surety

(Address)

- (1) Correct name of Contractor
- (2) A Corporation, a Partnership or an Individual, as the case may be
- (3) If Contractor is a Partnership, all partners should execute Bond

**POWER OF ATTORNEY
(Attach)**

**AFFIDAVIT OF ORGANIZATION AND AUTHORITY SWORN STATEMENT
BUCKHEAD SUBDIVISION WATER MAIN LOOPING**

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: _____

EQUAL EMPLOYMENT OPPORTUNITY

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 places, available to employees and applicants for employment, notices setting forth the provisions 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 this 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

(Vice) President

(CORPORATE SEAL)

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

BY: _____ (Seal)

WITNESS:

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

NONDISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Contract that the parties hereto, their agents, officials, 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 Fayetteville Public Works Commission, Fayetteville, North Carolina 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 law provided.

This provision shall be binding on the successors and assigns of the parties hereto with 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)

BY: _____
(Printed Name)

(Corporate Seal)

(Use the following form for signatures by a PARTNERSHIP or INDIVIDUAL):

BY: _____(SEAL)

(Printed Name)

WITNESS:

(Printed Name)

NON-COLLUSIVE AFFIDAVIT

State of _____)
)
County of _____)

_____ being first duly sworn,
deposes and says that:

- (1) He is the _____
(Owner, Partner, Officer, Representative or Agent)
of _____ the BIDDER that has
submitted the attached BID;
- (2) He 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 submit
a collusive or sham BID in connection with the Contract for which the attached BID has
been submitted; or to refrain from bidding in connection with such Contract; or have in any
manner, directly or indirectly, sought by agreement or collusion, or communication, or
conference with any 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, or cost elements of the BID price
or the BID price of any other BIDDER, or to secure through any collusion, conspiracy,
connivance, or unlawful agreement any advantage against (Recipient), 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 to before me this _____ day of _____, 20 ____ .

Notary Public

My Commission Expires:

END OF AFFIDAVIT

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

**CERTIFICATION OF PRIMARY PARTICIPANT REGARDING DEBARMENT,
SUSPENSION AND OTHER RESPONSIBILITY 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.)

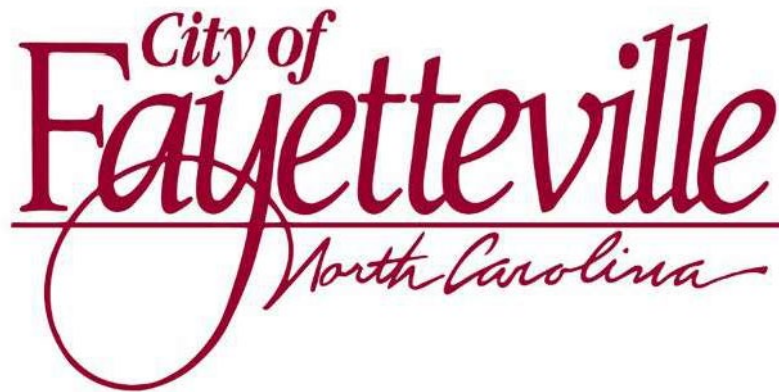
THE PRIMARY PARTICIPANT _____ CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET. SEQ. ARE APPLICABLE THERETO.

Signature

Title

Printed Name

Date



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 Public 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.

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.

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 Program.

Project Specific Goal - The Goal established for a particular project or contract based upon the availability of SDBEs 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 SDBEs 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 Program Administration.

The Coordinator shall administer the SDBE 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 SDBEs of City contracting opportunities through outreach activities.
- (c) Providing information and assistance to SDBEs 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 SDBEs, 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 Program Eligibility.

- (a) Only businesses that meet the criteria of SDBEs may participate in the Program.
- (b) The City shall apply the certification criteria and procedures of 49 CFR Part 26 to applicants 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 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 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 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 SDBEs to perform the functions of the Contracts and the City's utilization of SDBEs to date.

VII. Counting Participation of SDBEs.

(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 for the work of the Contract, and equipment purchased or leased by the SDBE (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 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 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 performs with its own forces and for which it is separately at risk shall be counted.

(d) Only expenditures to a SDBE 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 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 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 participation. If a SDBE 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 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 shall not be counted until that amount has been paid to the SDBE.

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 SDBEs. 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 in which the Bidder/Participant requires that the SDBE not provide subcontracting quotations to other bidders/proposers is prohibited.

(c) SDBEs 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 SDBEs 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 SDBEs with timely, adequate information about the plans, specifications, and requirements of the Contract to allow SDBEs to respond to the solicitation. The Bidder/Participant must follow up initial solicitations with interested SDBEs. 10 points.

(2) Providing or making the construction plans, specifications, and requirements available for review by SDBEs 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, minority, women, trade, community or contractor organizations identified by the City in the bid documents that provide assistance in recruitment of SDBEs. 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 SDBEs 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 SDBEs 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 SDBEs. The Bidder/Participant may not reject SDBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection of a SDBE based on price or lack of qualifications must be documented in writing. 15 points.
- (8) Providing assistance to an otherwise qualified SDBE 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 SDBEs in obtaining the same unit pricing with the bidder's suppliers in order to help minority SDBEs to establish credit. 25 points.
- (9) Negotiating joint venture and partnership arrangements with SDBEs to increase opportunities for SDBE participation. 20 points.
- (10) Providing quick pay agreements and policies to enable SDBEs 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 SDBEs. 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 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 Office in obtaining a new SDBE 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.
- (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, 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 SDBE, 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 FAYETTEVILLE PUBLIC
WORKS COMMISSION’S SDBE/HUB COMPLIANCE PROVISIONS**

APPLICATION:

The requirements of the City of Fayetteville’s Small Disadvantaged Business Program (the “SDBE Program”) for participation specific contracts are hereby made part of the Contract Documents. Copies of the Program may be obtained from:

Fayetteville 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 documents set forth below, properly executed. Returning executed copies indicates and establishes that the Bidder understands and agrees to any incorporated SDBE contract provisions.
2. All Bidders must provide with their Bid Proposal Form a properly completed and executed copy of the Identification of SDBE/HUB Participation Form
3. All Bidders must provide with their Bid Proposal Form a properly completed and executed copy of **either** Affidavit A – Listing of Good-Faith Efforts **OR** Affidavit B – Intent to Self-Perform with Own Workforce.
4. Upon being identified as the apparent lowest responsive, responsible Bidder, a Bidder shall, within seven (7) calendar days provide a properly completed and executed copy of **either** 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.

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.

Contractor

Signature

_____, _____
Printed Name Title

Date

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

Affidavit A: Listing of the Good Faith Efforts

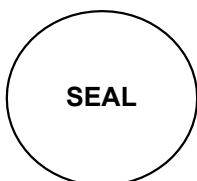
Affidavit of _____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked:
(A value of 50 points or greater achieves "good faith efforts")

- (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 NCGS 143-128.2(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 any applicable statutory provision may 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 _____

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

Affidavit B: Intent to Perform Contract with Own Workforce:

Affidavit of _____
(Name of Bidder)

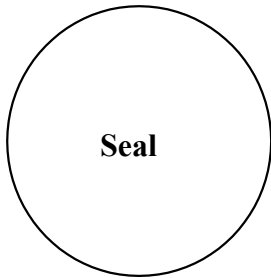
I hereby certify that it is our intent to perform 100% of the work required for the _____
_____ contract (Name of Project)

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 workforces; 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 ____ 2022
Notary Public _____
My commission expires _____

Affidavit C: Percentage of SDBE/HUB Participation

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 NCGS 143-128.2(d), the undersigned will enter into a formal agreement with small disadvantaged business enterprises 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: _____

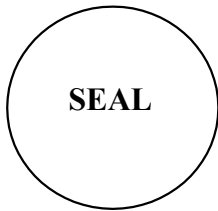
Signature: _____

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

Affidavit D: Good Faith Efforts

If Owner determines using reasonable discretion that Affidavit C is insufficient, Bidder agrees to provide the following information regarding any good-faith efforts.

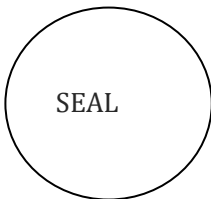
Name, Address and Phone No.	*SDBE/HUB Category	Description	Dollar Value

*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)

Bidder may be requested to provide documentation of the Bidder’s good-faith efforts. Examples of documentation may include the following:

- A. Copies of solicitations for quotes to small disadvantaged business firms. Each solicitation may include 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 _____

Identification of Small Disadvantaged/Local Business Participation

I, _____
(Name of Bidder)

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

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

***Local: Fayetteville Metropolitan Statistical Area (MSA) comprising of Cumberland County, Hoke County, and Harnett County. PWC is requesting this information for reporting purposes only, and use of local entities will not be considered for compliance with the requirements of the SDBE Program.

The total value of small disadvantaged/local business contracting will be \$ _____

FAYETTEVILLE PUBLIC WORKS COMMISSION
Small Local Supplier Subcontractor Disclosure Form

Contractor: _____

Address & Phone: _____

Project: _____

Name: _____

Pay Application #: _____ Period: _____

Please complete the below form by providing the necessary information for the estimated payment to be made to each subcontractor, vendor, or supplier for the work associated with the identified pay application. This form must be fully completed and attached to each pay application.

Firm Name, Address, and Contact Information	Estimated Payment Amount	Type of Work/Commodity (Include NAICS Code)

Signature

_____, _____
Printed Name Title

Date

SECTION B - CONTRACT EXECUTION DOCUMENTS

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NOTICE OF AWARD

TO: _____

PROJECT DESCRIPTION: BUCKHEAD SUBDIVISION WATER MAIN LOOPING

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 _____, 2023.

**OWNER: FAYETTEVILLE PUBLIC WORKS COMMISSION
FAYETTEVILLE, NC**

**BY: Tanga Anderson-Solomon
TITLE: Procurement Manager**

ACCEPTANCE OF AWARD

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

Receipt of the preceding NOTICE OF AWARD is hereby acknowledged this the _____
day of _____, 2023.

(CONTRACTOR)

By: _____

Title: _____

- END OF SECTION -

State of North Carolina
Cumberland County

CONSTRUCTION AGREEMENT

THIS CONSTRUCTION AGREEMENT (“Agreement”) is made by and between the City of Fayetteville (the “City”), by and through 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. Instructions to Bidders

- c. Bid Forms, including but not limited to Bid Form, Bid Summary, and Bidder Agreement
- d. Bid Schedule - Performance and Delivery
- e. Notice of Award
- f. Acceptance of Award
- g. Certificates of Insurance
- h. Notice to Proceed and Acceptance
- i. Definitions
- j. PWC General Conditions
- k. Exhibits

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:

- l. Notice to Proceed and Acceptance of Notice
- m. Work Change Directive(s)
- n. Change Order(s)
- o. 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 (insert general description), 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 \$ [redacted] (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 [REDACTED], plus any modifications thereof allowed in accordance with the PWC General Conditions (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; 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 the daily amount specified in the Contract Documents ("Liquidated Damages") for each calendar day Contractor fails to achieve completion of the Work by the Completion Date.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

10. Contractor's Damage Repair Obligations. Contractor shall be responsible for all damages to the property of the City 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.

11. 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 PWC General Conditions.

12. 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.

13. 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.

14. Indemnity. Contractor shall indemnify, defend, and hold harmless PWC and its Commissioners, officers, employees, agents, and representatives and the City 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.

15. 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.

16. Warranty. Contractor's warranties to PWC pursuant to the PWC General Conditions 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.

17. 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: Mick Noland, Interim CEO/General Manager
PO Box 1089
Fayetteville, NC 28302

To Contractor:
[INSERT MAILING ADDRESS]

22. Termination. This Agreement may be terminated in accordance with the PWC General Conditions.

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.

The City of Fayetteville, by and through the Fayetteville Public Works Commission

[CONTRACTOR FULL LEGAL NAME]

By: _____
Mick Noland, Interim 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



GENERAL CONDITIONS FOR

FOR THE FAYETTEVILLE PUBLIC WORKS COMMISSION

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Article I. Definitions and Terminology

Section 1.01 Definitions

Capitalized terms used in the Bid Documents or Contract Documents, including the singular and plural forms, shall have the meaning indicated in the definitions below. In addition to terms specifically defined below, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

- (a) **Addenda**—Written or graphic instruments issued before the opening of Bids which clarify, correct, or change the Bid Documents or other Contract Documents.
- (b) **Agreement**—The written instrument, executed by PWC and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties, designates the specific documents that encompass the Contract Documents, and provides other material provisions that govern the relationship between the parties as it relates to the Project. The Agreement is also referred to, and titled as, the “Construction Agreement.”
- (c) **Application for Payment**—The form that Contractor shall use during the Work in requesting progress or final payments. Any Application for Payment shall be accompanied by such supporting documentation as is required by the Contract Documents.
- (d) **Bid**—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- (e) **Bidder**—An individual or entity that submits a Bid to PWC for the Project.
- (f) **Bid Documents**—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
- (g) **Bidding Requirements**—The Invitation to Bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bidder’s original Bid with any requisite attachments.
- (h) **Business Day**—each calendar day that is not a Saturday, Sunday, or holiday observed by PWC (New Year’s Day, Martin Luther King, Jr. Day, Good Friday, Memorial Day, Independence Day, Labor Day, Veteran’s Day, Thanksgiving Day (and the day after), and Christmas (2 days) for its employees.
- (i) **Change Order**—A document that is signed by Contractor and PWC, which authorizes an addition, deletion, or revision in the Work, an adjustment in the Contract Price or the Contract Times, a change in the scope of the Project, or other revision to the Agreement, issued on or after the Effective Date of the Agreement.
- (j) **Change Proposal**—A written request by Contractor, submitted in compliance with the procedural requirements set forth in the Contract Documents, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by PWC concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Agreement.

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- (k) Completion of the Project—Has the meaning as set forth in the Construction Agreement.
- (l) Constituent of Concern—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
- (m) Contract Price—The money that PWC has agreed to pay Contractor for Completion of the Project in accordance with the Contract Documents. May also be referred to as “Price” throughout the Contract Documents.
- (n) Contract Times—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; and (b) Completion of the Project.
- (o) Contractor—The individual or entity with which PWC has contracted for performance of the Work and Completion of the Project.
- (p) Day—a calendar day of 24 hours measured from midnight to the next midnight. Also referred to throughout the Contract Documents as “days” or “calendar days.”
- (q) Design Engineer—The Engineering firm identified on the Contract Drawings and their duly authorized employees and agents, such employees and agents acting within the scope of the particular duties entrusted to them in each case.
- (r) Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
- (s) Field Order—A written order issued by Project Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
- (t) Final Completion—The day the on which any specified Work is complete in accordance with the Contract Documents.
- (u) Laws and Regulations; Laws or Regulations—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction. Such terms, unless otherwise specified, shall refer to North Carolina laws and regulations.
- (v) Milestone—A principal event in the performance of the Work that the Agreement requires Contractor to achieve by an intermediate completion date or by a time prior to Completion of the Project.
- (w) Non-Compliance Notice—A written notice issued by PWC to Contractor indicating a

General Conditions

violation of any term, provision, or requirement of the Contract Documents.

- (x) Notice of Award—The written notice by PWC to a Bidder providing of PWC's acceptance of the Bid upon timely compliance by the Bidder with any conditions precedent provided in the notice.
- (y) Notice to Proceed—A written notice by PWC to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
- (z) Progress Schedule—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
- (aa) Project—has the meaning ascribed to it in the Agreement and is as more specifically set forth throughout the Contract Documents. "Project" includes the total undertaking to be accomplished for PWC by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
- (bb) Project Engineer—the PWC employee assigned by PWC to coordinate, manage, monitor, and otherwise perform the administration necessary and consistent with PWC's responsibilities for the Completion of the Project. The Project Engineer has authority to coordinate and work with the Design Engineer regarding any engineering questions, concerns, revisions, alterations, deletions, or additions to the Work, and has authority to approve any changes in the scope of the Work. Project Engineer may assign a "Project Coordinator" who will also be an employee of PWC and have the duties and responsibilities set by the Project Engineer.
- (cc) PWC—Fayetteville Public Works Commission. PWC may also be referred to in the Contract Documents as "Owner."
- (dd) Samples—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
- (ee) Schedule of Submittals—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Project Engineer's review of the submittals and the performance of related construction activities.
- (ff) Schedule of Values—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
- (gg) Shop Drawings—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Contract Drawings and are not Contract Documents.
- (hh) Site—Lands or areas indicated in the Contract Documents as being furnished by PWC upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by PWC which are designated for the use of Contractor.

General Conditions

- (ii) Specifications—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
- (jj) 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.
- (kk) Substantial Completion—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Project Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
- (ll) Successful Bidder—The Bidder whose Bid PWC accepts, and to which PWC provides a Notice of Award.
- (mm) Supplementary Conditions—Any part of the Agreement that amends or supplements these General Conditions.
- (nn) Supplier—A manufacturer, fabricator, supplier, distributor, materialman, 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 a Subcontractor.
- (oo) Technical Data—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
- (pp) 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 but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
- (qq) Unit Price Work—Work to be paid for on the basis of unit prices.
- (rr) Work—The entire 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, materials, equipment, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents and necessary to achieve Completion of the Project.

General Conditions

- (ss) Work Change Directive—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by PWC and recommended by the Project Engineer, ordering an addition, deletion, or revision in the Work.

Section 1.02 Terminology

The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

(a) Intent of Certain Terms or Adjectives:

- (i) The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Project Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Project Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the 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 is not intended to and 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 the Contract Documents.

(b) Defective—when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

- (i) does not conform to the Contract Documents; or
(ii) does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
(iii) has been damaged prior to Project Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by PWC at Substantial Completion in accordance with the Contract Documents).

(c) Furnish, Install, Perform, Provide

- (i) 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.
(ii) 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.
(iii) 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.
(iv) If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

General Conditions

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

Article II. Preliminary Matters

Section 2.01 Delivery of Bonds and Evidence of Insurance

- (a) Bonds: Contractor shall deliver to PWC such bonds as Contractor is required to furnish simultaneously with delivering the executed Agreement to PWC.
- (b) Contractor's Insurance: Contractor shall deliver to PWC the certificates and other evidence of the insurance required by the Contract Documents simultaneously with delivering the executed Agreement to PWC.

Section 2.02 Copies of Documents

- (a) PWC will furnish to Contractor up to five (5) printed copies of the Contract Documents upon request by Contractor, and one (1) copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- (b) PWC will maintain and safeguard at least one original printed record version of the Agreement, including Drawings and Specifications signed and sealed by Design Engineer or other design professionals as applicable. PWC agrees to make such original printed record version of the Agreement reasonably available to Contractor for review during PWC's normal business hours. PWC may delegate the responsibilities under this provision to Design Engineer.

Section 2.03 Before Starting any Work

- (a) Within ten (10) Days after the Contractor receives the Notice of Award from PWC (or as otherwise specifically required by the Contract Documents), Contractor shall submit to PWC for timely review:
 - (i) a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the identifiable aspects of the Work, including any Milestones specified in the Contract Documents;
 - (ii) a preliminary Schedule of Submittals; and
 - (iii) Any Shop Drawings, Samples, and other submittals required by the Contract Documents before the Preconstruction Conference.

Section 2.04 Preconstruction Conference; Designation of Authorized Representatives

- (a) Before any Work at the Site is started, a preconstruction conference attended by PWC, Project Engineer, Contractor, Design Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss general Project issues including, but not limited, the following:
 - (i) The schedules and submittals referred to in Section 2.03;
 - (ii) Contractor's designated authorized representative as described in Section 2.04(b);
 - (iii) Safety;
 - (iv) Procedures for handling Shop Drawings, Samples, and other submittals;

General Conditions

- (v) Processing Applications for Payment, electronic or digital transmittals;
- (b) At the preconstruction conference Contractor shall designate, in writing, a specific individual to act as its authorized representative with respect to its services and responsibilities under the Contract Documents. Such individual shall have the authority to transmit and receive information, render decisions relative to the requirements of the Contract Documents, and otherwise act on behalf of the Contractor.

Section 2.05 Initial Acceptance of Schedules

- (a) At least twenty (20) Days before submission of the first Application for Payment a conference, attended by Contractor, PWC, and others as appropriate, will be held to review for acceptability to Project Engineer as provided below the schedules submitted in accordance with Paragraph 2.03(a). PWC shall have ten (10) Days to review the submission and provide feedback to Contractor. Contractor shall then have ten (10) days to make any corrections and adjustments as indicated by PWC and to complete and resubmit the schedules as necessary. No progress payment shall be made to Contractor until acceptable schedules are submitted to and approved by Project Engineer.
- (b) The Progress Schedule will be acceptable to Project Engineer if it provides an orderly progression of the Work to achieve Completion of the Project within the Contract Times. Such acceptance will not impose on Project Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
- (c) Contractor's Schedule of Submittals will be acceptable to Project Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

Section 2.06 Electronic Transmittals

- (a) Except as otherwise stated elsewhere in the Contract Documents, PWC and Contractor and their authorized agents may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through electronic mail at the address(es) designated by each Party.
- (b) When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

Article III. Contract Documents: Intent, Requirements, Reuse

Section 3.01 Intent

- (a) The Contract Documents are complementary; what is required by one is as binding as if required by all.
- (b) It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

General Conditions

- (c) Project Engineer, Design Engineer, or both, will issue clarifications and interpretations of the Contract Documents as provided herein.
- (d) To the extent necessary that Work, construction, or conditions not covered by these General Conditions is required for Contractor to achieve Completion of the Project, "Special Conditions" for such Work will be provided to Contractor and shall be part of the Contract Documents.
- (e) In case of any inconsistency, conflict, or ambiguity among the Contract Documents, the documents shall govern in the following order: (1) Change Orders; (2) Addenda; (3) the fully executed Agreement; (4) Special Conditions; (5) any Drawings and Technical Specifications; and (6) General Conditions.

Section 3.02 Reference Standards

- (a) Standards Specifications, Codes, Laws and Regulations
 - (i) Reference in the Contract Documents to standard specifications, manuals, reference standards, 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, reference standard, code, or North Carolina laws and regulations in effect as of the Effective Date of the Agreement, except as may be otherwise specifically stated in the Contract Documents.
 - (ii) No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of PWC or Contractor, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to PWC or any of its officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents.

Section 3.03 Reporting and Resolving Discrepancies

- (a) Contractor's Verification of Figures and Measurements
 - (i) Before undertaking any portion of the Work, Contractor shall review all of the Contract Documents to and check and verify all figures and dimensions for the Project. Contractor shall promptly report in writing to Project Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Project Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to these General Conditions.
 - (ii) If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Project Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as defined hereinafter) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification

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or interpretation by Project Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to these General Conditions.

(b) Resolving Discrepancies:

- (i) Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for PWC shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - 1) the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - 2) 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).

Section 3.04 Reuse of Documents

- (a) Contractor and its Subcontractors and Suppliers shall not have or acquire any title to or ownership rights in any of the:
 - (i) Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Design Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of PWC and Design Engineer and specific written verification or adaptation by Design Engineer, where applicable; or
 - (ii) Contract Documents and shall not reuse any such Contract Documents for any purpose without PWC's express written consent.
- (b) The prohibitions of this provision shall survive final payment or termination of the Agreement. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

Article IV. Commencement and Progress of the Work

Section 4.01 Commencement of Work

- (a) The Contract Times will commence to run on the day indicated in the Notice to Proceed issued by PWC to Contractor. A Notice to Proceed may be given at any time after the Effective Date of the Contract.
- (b) Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date. Contractor's failure to commence the Work within fifteen (15) Days of the date stated in the Notice to Proceed shall be deemed a material breach of the Agreement unless PWC otherwise determines in its sole discretion and agrees in writing to a delay of the Contract Times based on the applicable circumstances.

Section 4.02 Reference Points

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- (a) Construction staking will be performed by Design Engineer, who will also prepare and furnish construction cut sheets, signed and sealed by a North Carolina professional land surveyor, to PWC and Contractor. Contractor shall not install any utilities without a sheet. All requests for staking shall be made not less than 96 hours in advance.
- (b) Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and staking, and shall make no changes or relocations without the prior written approval of Project Engineer. Contractor shall report to Project Engineer whenever any reference point staking is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or staking by professionally qualified personnel.

Section 4.03 Progress Schedule

- (a) Contractor shall adhere to the Progress Schedule established in accordance with Section 2.03 as it may be adjusted from time-to-time as provided below. Contractor shall submit to Project Engineer for acceptance any proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article IX.
- (b) Contractor shall carry on the Work and adhere to the Progress Schedule during any disputes or disagreements with PWC. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by these General Conditions or as PWC and Contractor may otherwise agree in writing.

Section 4.04 Delays in Contractor's Progress

- (a) If PWC, Project Engineer, anyone for whom PWC is responsible, or a Force Majeure Event delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- (b) Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- (c) Contractor must submit any Change Proposal, consistent with the procedure set forth in Article IX, seeking an adjustment in Contract Price or Contract Times under this provision within ten (10) calendar days of the commencement of the event that causes the delay, disruption, or interference with the Work and Contract Times.

Article V. Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions

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Section 5.01 Availability of Lands

- (a) PWC will be responsible for obtaining any required easements and encroachments, and otherwise furnishing the Site, necessary to complete the Work, except as provided elsewhere in the Contract Documents.
- (b) Upon reasonable written request, PWC shall furnish to Contractor a current statement of record legal title and legal description of the lands upon which the Work is to be completed and PWC's interest therein.
- (c) Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment necessary to complete the Work. Any and all agreements between the Contractor and any individual property owner(s) shall not obligate PWC, PWC's employees, Project Engineer, or Design Engineer in any manner, and Contractor shall, before performing any work on any such property, obtain a signed and notarized release of liability of PWC and Design Engineer that is suitable to PWC as confirmed in writing.
- (d) Contractor and any of its Subcontractors shall exercise care and caution to avoid damage to any private property. Should any such damage to private property occur, it is Contractor's responsibility to notify the Project Engineer promptly in writing that such damage occurred, the extent of the damage, and Contractor's written plan to remedy the damage. If Contractor fails to timely correct damage to private property, PWC reserves the right to withhold progress payments until damage is corrected and/or to correct damage and back-charge Contractor for costs incurred. At the Completion of the Project, Contractor shall obtain a signed release from all owners of private property to which damage occurred that releases PWC and Design Engineer and acknowledges a settlement for the damage or that such damage was adequately remedied.

Section 5.02 Use of Site and Other Areas

- (a) Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site and other adjacent areas permitted by Laws and Regulations and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
- (b) Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris during the progress of the Work. Removal and disposal of such debris shall conform to applicable Laws and Regulations.
- (c) Prior to Completion of the Project, Contractor shall clean the Site and the Work and make it ready for utilization by PWC. At the completion of all of the Work, Contractor shall remove from the Site and adjacent areas 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.

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- (d) 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 structures or land to stresses or pressures that will endanger them.

Section 5.03 Differing Subsurface or Physical Conditions or Underground Facilities

- (a) If Contractor believes that any subsurface or physical condition or Underground Facilities that is uncovered or revealed at the Site either:
 - (i) is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely is materially inaccurate;
 - (ii) is of such a nature as to require a change in the Contract Documents;
 - (iii) differs materially from that shown or indicated in the Contract Documents; or
 - (iv) 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, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or Underground Facilities or performing any Work in connection therewith, notify PWC and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement approved by PWC permitting Contractor to do so.

- (b) After receipt of Contractor's written notice, Project Engineer will review the subsurface or physical condition or Underground Facilities in question; determine the necessity of PWC obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any of the differing site condition categories in this Section 5.03; and obtain any pertinent cost or schedule information from Contractor.
- (c) Project Engineer will issue a written statement to Contractor regarding the subsurface or physical condition or Underground Facilities in question, which addresses the resumption of Work in connection with such condition and indicates whether any change in the Contract Documents will be made.
- (d) Possible Price and Times Adjustments:
 - (i) Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition or Underground Facilities, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - 1) such condition must fall within at least one of the categories in this Section 5.03; and,
 - 2) Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
 - (ii) Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition or Underground Facilities if:
 - 1) Contractor knew of the existence of such condition at the time Contractor proffered its

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- 2) Bid to PWC or executed the applicable Agreement for the Project; or
 - 2) the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's Bid; or
 - 3) Contractor failed to give the written notice as required.
- (iii) If PWC and Contractor agree regarding Contractor's entitlement to, and the amount or extent of, any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
- (iv) Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 calendar days after Project Engineer's written statement to Contractor regarding the subsurface or physical condition or Underground Facilities in question.

Section 5.04 Underground Utilities

- (a) Contractor shall ascertain the location and type of all underground utility lines or structures that may be located within the limits of the Site or any area where Work is to be performed.
- (i) The exact location of underground utilities or structures may vary from prior plans, permits, maps, or other documentation, and others may not be designated. The Contractor is fully responsible for verification of the exact location of all underground utility lines or structures within the limits of the Site or the area where the work is to be performed, whether known or unknown by PWC, and for providing necessary protection and/or repair if damage.
 - (ii) Should uncharted or incorrectly charted piping or other utilities be encountered during excavations, the Contractor shall immediately halt any Work, notify PWC, and await direction from PWC before proceeding with any Work. The Contractor shall fully cooperate with PWC and any other utility company in keeping respective services and facilities in operation.
- (b) PWC has used reasonable care 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. Actual horizontal and vertical locations have not been verified. As part of the 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) Days in advance of actual installation of new utilities to allow PWC an opportunity to adjust grades and alignments, to avoid a conflict, and to address any other issues.
- (c) The Contractor shall adhere to the provisions of the North Carolina Underground Utility Safety and Damage Prevention Act. The Contractor shall make a documented request to the North Carolina One Call Center, and/or individual utility owners, in order to locate any facilities within the Site limits or any area where Work is to be performed at least forty-eight (48) hours in advance of the day the Work is scheduled to begin. The Contractor shall include the cost of any coordination and cooperation for utilities in its Bid.

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- (i) Location assistance requested from PWC by Contractor should include the actual horizontal location, type number, size, and depth of all lines. All costs associated with locating and marking existing utilities or the utilities representatives shall be the responsibility of the Contractor.
- (ii) 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.
- (d) 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) 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.
 - (i) The Contractor shall inform all equipment operators, either those employed by him or those employed by his subcontractors, of information obtained from the utility owners prior to initiation of any aspect of any Work.
- (e) PWC and Design Engineer shall not be responsible for the accuracy or completeness of any information or data provided to the Contractor with respect to underground facilities.
- (f) The entire cost of all of the following will be included in the Contract Price, and Contractor shall bear full responsibilities for all such costs, including but not limited to:
 - (i) Reviewing and checking all such information and data;
 - (ii) Locating all underground facilities shown or indicated in the Contract Documents;
 - (iii) Coordination of the Work with the owners of such underground facilities, including PWC, during any portion of the Work; and
 - (iv) The safety and protection of all such underground facilities and repairing any damage thereto resulting from the Work.
- (g) Contractor shall be responsible for the discovery of existing underground installations, in advance of any excavating or trenching as required in the Contract Documents.
- (h) If an underground facility is discovered at or contiguous to the Site that was not shown or indicated in the Contract Documents or of which Contractor was not aware prior to starting that portion of any Work, 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), identify the owner of such underground facility and give written notice to PWC. Upon receipt of written notice, PWC will review the pertinent condition, determine the necessity of obtaining additional information, and advise Contractor in writing. During such time, Contractor shall be responsible for the safety and

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protection of such underground facility. If PWC concludes that a change in the Contract Documents is required, a Change Order will be issued.

- (i) The Contract Price and/or the Contract Time, may be adjusted if PWC determines, in its discretion, 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:
 - 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.

Section 5.05 Hazardous Environmental Conditions at Site

- (a) Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work or Hazardous Environmental Condition was caused by Contractor.
- (b) Contractor shall be responsible for controlling, containing, and removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- (c) If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency); and (3) immediately notify Project Engineer (and promptly thereafter confirm such notice in writing). Project Engineer will evaluate such condition or take corrective action, if any. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then PWC may have the Hazardous Environmental Condition removed and remediated and impose a set-off against payments to Contractor to account for the reasonable associated costs.
- (d) Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after PWC has delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- (e) If PWC and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within thirty (30) calendar days of PWC's written notice regarding the resumption of Work, Contractor may submit a Change Proposal or PWC may impose a set-off.
- (f) If after receipt of such written notice Contractor does not agree to resume such Work

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based on reasonable evidence it is unsafe or does not agree to resume such Work under such special conditions, then PWC may order the portion of the Work that is in the area affected by such condition to be deleted from the Work.

Article VI. Bonds and Insurance

Section 6.01 Performance and Payment Bonds

- (a) Contractor shall obtain and furnish to PWC a performance bond in the amount of one hundred percent (100%) of the Contract 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.
- (b) Contractor shall obtain and furnish to PWC a payment bond in the amount of one hundred percent (100%) of the Contract 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.
- (c) 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.
- (d) In the event PWC deems the surety or sureties upon any bond necessary for the 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, and within ten (10) days after the receipt of notice from PWC, furnish such additional bond(s) 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.
- (e) By executing the Agreement, Contractor understands and acknowledges that PWC, as a public authority, and the City, as a municipal corporation, are 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.

Section 6.02 Insurance

- (a) Contractor shall maintain during the life of the Agreement and during the completion of any Work the following insurance coverages, which insurance shall be placed with insurance companies authorized to do business in the State of North Carolina and rate A minus VII or better by the current edition of Best's Key Rating Guide or otherwise approved in writing by PWC:
 - (i) 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. Commercial general liability coverage shall be written on an "occurrence" basis.

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- (ii) 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.
- (iii) Workers' compensation insurance as required by the Laws and Regulations. In the event any employee(s), contractor(s), or subcontractor(s) engaged to perform any Work under the Agreement is not protected under the applicable workers' compensation laws, the Contractor shall provide adequate coverage for the protection of such employee(s), contractor(s), or subcontractor(s) not otherwise protected.
- (iv) In the event the Project concerns building construction or repair work, Contractor shall purchase and maintain "Builder's Risk" insurance. This insurance shall include the interests of the PWC, Contractor, and any Subcontractor(s) 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 Contract Price), and to remain in force until Completion of the Project.
- (v) 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 or stored on Site for any period of time. This coverage shall be an "Installation Floater." If no building construction or repair is involved for the Project, the amount of the coverage shall equal the value of the materials stored on site.
- (b) Prior to initiating any Work on the Project, Contractor shall deliver certificates of insurance confirming each such coverage set forth above, and Contractor shall direct its insurers to provide annually to PWC certificates confirming each such coverage during the coverage period.
- (c) PWC shall be named as an additional insured in the comprehensive automobile and commercial liability insurance policies.
- (d) 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.
- (e) The insurance coverage requirements 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.
- (f) If Contractor fails to obtain and maintain any required insurance, PWC may exclude Contractor from the Site, impose an appropriate set-off against payment, and exercise PWC's termination rights pursuant to the Contract Documents.

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- (g) PWC does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

Article VII. Contractor's Responsibilities

Section 7.01 Supervision and Superintendence

- (a) Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction subject to the terms, provisions, and specifications set forth in the Contract Documents.
- (b) At all times during the progress of the Work, Contractor shall assign a competent superintendent, satisfactory to Project Engineer, to supervise the Work and to respond to Project Engineer concerning PWC's interests in the Work.
- (c) Contractor's superintendent shall have full authority to act on behalf of Contractor and all communications, instructions, directions, and notices given to the superintendent by the Project Engineer shall be binding to the Contractor.
- (d) Contractor's superintendent shall be responsible for coordination of the Work with other contractors or subcontractors. The superintendent shall not be replaced without written notice to PWC except under extraordinary circumstances.
- (e) Subcontractors
 - (i) Contractor shall submit the names and references all Subcontractors to the Project Engineer for approval before commencing any Work.
 - 1) In the event Contractor seeks to substitute any Subcontractor that was identified in Contractor's Bid, Contractor shall promptly provide PWC with: (1) the Subcontractor it seeks to substitute; (2) the identity of the Subcontractor to be substituted; and (3) the reason for the requested substitution.
 - 2) PWC will review the requested substitution within five (5) Business Days and provide written approval or denial of the substitution, with such approval not to be unreasonably withheld.
 - (ii) Contractor's superintendent shall be available to be present at the Site at any time that any Subcontractor(s) is performing any of the Work. Construction activity shall be stopped if the Contractor's superintendent is not available to be at the Site.

Section 7.02 Labor; Working Hours

- (a) Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site. Contractor shall remove from the

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Project any person who appears incompetent, disorderly, or otherwise unsatisfactory. Contractor shall also remove any person who appears in PWC's sole discretion to be incompetent, disorderly, or otherwise unsatisfactory

- (b) Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed on Business Days. Contractor will not perform Work on non-Business Days. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with PWC's written consent, which will not be unreasonably withheld. In such circumstances, Contractor shall submit a written request to PWC at least two (2) Business Days prior to any Work that it requests to complete on a non-Business Day and PWC will, in its sole discretion, approve or deny such request. If such work outside of a Business Day is approved, PWC will set forth the specific parameters that Contractor must follow, including time of work, personnel, and any other issues.⁸

Section 7.03 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 Project, whether or not such items are specifically called for in the Contract Documents.
- (b) All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise specified in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of PWC. If required by PWC or its designee, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- (c) 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 specified in the Contract Documents.

Section 7.04 "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 of such an item 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 is permitted, Contractor may request that Project Engineer authorize the use of other items of material or equipment under the circumstances described below.
 - (i) If Project Engineer determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Project Engineer shall deem it an "or equal" item and confirm such in writing to Contractor. A proposed item of material or equipment will be considered functionally equal to an item so named if:
 - 1) in the exercise of reasonable judgment Project Engineer determines that:

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- a) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - b) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - c) it has a proven record of performance and availability of responsive service; and
 - d) it is not objectionable to PWC.
- 2) Contractor certifies that, if approved and incorporated into the Work:
- a) there will be no increase in the Contract Price or Contract Times; and
 - b) it will conform substantially to the detailed requirements of the item specified in the Contract Documents.
- (b) Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- (c) Project Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Project Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Project Engineer will be the sole judge of acceptability. Contractor shall not order, furnish, install, or utilize any "or-equal" it until Project Engineer has reviewed the request, determined that the proposed item is an "or-equal," and provided written confirmation to Contractor.
- (d) Project Engineer's denial of an "or-equal" request shall be final and binding and may not be reversed through an appeal under any provision of the Contract Documents.

Section 7.05 Concerning Subcontractors, Suppliers, and Others

- (a) Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to PWC.
- (b) Contractor shall not subcontract more than forty-nine percent (49%) of the final Contract Price.
- (c) Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract Documents.
- (d) After the submittal of Contractor's Bid or final negotiation of the terms of the Agreement, PWC may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work.
- (e) Prior to entry into any binding subcontract or purchase order, Contractor shall submit to PWC the identity of the proposed Subcontractor or Supplier (unless PWC has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to PWC unless PWC raises a substantive, reasonable objection within five (5) Business Days.
- (f) No acceptance by PWC of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of PWC to the completion of the Work in accordance with the Contract Documents.

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- (g) Contractor shall be fully responsible to PWC for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- (h) Contractor shall be solely responsible for scheduling and coordinating the Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- (i) Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with PWC, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- (j) All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of PWC.
- (k) PWC may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- (l) Nothing in the Contract Documents:
 - (i) shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between PWC or Design Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - (ii) shall create any obligation on the part of PWC or Design Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

Section 7.06 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 that is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of PWC, 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 PWC in the Contract Documents.

Section 7.07 Permits

- (a) Unless otherwise specified in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses necessary to achieve Completion of the Project. Contractor shall timely seek assistance from PWC if necessary to obtain any permits or licenses; provided that, the Contract Time shall not be extended if PWC determines, in its discretion, that Contractor delayed or otherwise did not act expeditiously in requesting such assistance. PWC shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for Completion of the Project that are applicable at the time of the submission of Contractor's Bid.

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Section 7.08 Taxes

- (a) Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the applicable Laws and Regulations for the Project and which are applicable during the performance of the Work.

Section 7.09 Laws and Regulations

- (a) Contractor shall give all notices required by, and shall comply with, all Laws and Regulations applicable to the Project. Except as otherwise expressly required, PWC shall not be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- (b) Contractor shall bear all resulting costs and losses for any of its actions or inactions that are contrary to Laws or Regulations.
- (c) PWC or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under the Agreement) concerning any Laws or Regulations having an effect on the Contract Price or Contract Times, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If PWC and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 calendar days of such notice Contractor may submit a Change Proposal.

Section 7.10 Record Documents

- (a) Contractor shall maintain in good order one (1) printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. These record documents, together with all approved Samples, will be available to Project Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to PWC.

Section 7.11 Safety and Protection

- (a) Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - (i) all persons on the Site or who may be affected by the Work;
 - (ii) all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - (iii) other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- (b) Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or

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loss, and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify PWC, the owners of adjacent property or Underground Facilities, and other contractors and owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

- (c) Contractor shall comply with the requirement of any of PWC's applicable health programs, which may be revised from time to time based on specific circumstances or applicable guidance from the Center for Disease Control or other applicable entity. Such health programs will be identified in the Special Conditions if applicable to the Project.
- (d) Contractor shall comply with the requirements of PWC's applicable safety programs. The Special Conditions identify any of PWC's safety programs that are applicable to the Project.
- (e) Contractor shall remedy, at its expense, all damage, injury, or loss to any property 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.
- (f) Contractor's duties and responsibilities for safety and protection shall continue until such time as Completion of the Project is achieved.
- (g) Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.
- (h) Contractor shall designate in writing to PWC 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.

Section 7.12 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, and shall, act to prevent threatened damage, injury, or loss. Contractor shall give PWC 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 any emergency. If PWC 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.

Section 7.13 Shop Drawings, Samples, and Other Submittals

- (a) Contractor shall timely submit Shop Drawings and Samples required by the Contract Documents to Project Engineer for review and approval in accordance with applicable specifications.
- (b) Before submitting a Shop Drawing or Sample, Contractor shall have
 - (i) reviewed the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

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- (ii) verified all measurements, quantities, dimensions, performance and design criteria, installation requirements, materials, catalog numbers, and similar information;
 - (iii) verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - (iv) verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- (c) With each submittal, Contractor shall give Project Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to PWC for review and approval of each such variation.
- (d) Where a Shop Drawing or Sample is required by the Contract Documents, any related Work performed prior to Project Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- (e) Project Engineer will provide timely review of any required Shop Drawings and Samples. Such review, and subsequent determination of approval, will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- (f) Project Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
- (g) Project Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not change the Contract Times or Contract Price, unless such changes are included in a Change Order.
- (h) Project Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall not result in such item becoming a Contract Document.
- (i) Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples.
- (j) Resubmittal Procedures:
- (i) Contractor shall make corrections required by Project Engineer and shall return the required number of corrected copies of Shop Drawings and submit new Samples as required for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by PWC or Project Engineer on previous submittals.
 - (ii) Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three (3) submittals. If PWC has

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engaged a Design Engineer for the Project, Design Engineer will record Design Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Design Engineer's charges to PWC for such time. PWC may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

- (iii) If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Design Engineer's charges to PWC for its review time, and PWC may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

Section 7.14 Contractor's General Warranty and Guarantee

- (a) In order to induce PWC to enter into an Agreement with Contractor for the Project, Contractor warrants and guarantees to PWC that:
 - (i) 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 the Agreement in accordance with the terms and conditions of the Agreement, and the Agreement constitutes a legal, valid, and binding obligation of Contractor enforceable against it in accordance with its terms.
 - (ii) Contractor has read the Contract Documents, and acknowledges and understands all data, materials, specifications, and requirements identified in the Contract Documents.
 - (iii) 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.
 - (iv) Contractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance to complete the Project.
 - (v) 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 Detail Specifications 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.
 - (vi) 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.
 - (vii) Based on the information and observations referred to in subsection "(v)" 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 Contract Price and in accordance with the other terms and conditions of the Contract Documents.
 - (viii) 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.
 - (ix) Contractor has given PWC written notice of all conflicts, errors, ambiguities, or

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- discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by PWC is acceptable to Contractor.
- (x) The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
 - (xi) 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.
 - (xii) 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.
- (b) Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will 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:
- (i) observations by Project Engineer;
 - (ii) recommendation by Project Engineer or payment by PWC of any progress or final payment;
 - (iii) the issuance of a certificate of Substantial Completion by Project Engineer or any payment related thereto by PWC;
 - (iv) use or occupancy of the Work or any part thereof by PWC;
 - (v) any review and approval of a Shop Drawing or Sample submittal;
 - (vi) the issuance of a notice of acceptability by Project Engineer;
 - (vii) any inspection, test, or approval by others; or
 - (viii) any correction of defective Work by PWC.
- (c) If the Contract Documents requires the Contractor to accept the assignment of a contract entered into by PWC, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to PWC for the Work described in the assigned contract.

Section 7.15 Indemnification

- (a) Contractor shall indemnify, defend, and hold harmless PWC and its Commissioners, officers, employees, agents, and representatives and the City 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.
- (b) Contractor's obligation to indemnify, defend, and hold harmless the Indemnitees shall survive the termination of the Agreement.
- (c) In any and all claims against the Indemnitees 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, Contractor's 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 such Subcontractor, Supplier, or other individual or entity under workers' compensation acts,

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disability benefit acts, or other employee benefit acts.

Section 7.16 Claims Procedure

- (a) PWC shall notify the Contractor of all potential claims related to the Work within seven (7) calendar days of receiving notification or having knowledge of such potential claim. Should the Contractor receive a potential claim related to the Work, the Contractor shall notify PWC within seven (7) calendar days of receiving notification. The Contractor shall provide the claimant and PWC with a written response acknowledging receipt of the claim within seven (7) calendar days.
- (b) If the Contractor meets with the Claimant about the claim, a representative designated by PWC shall be present at all times. PWC shall maintain a record of any claim received, and the steps taken to resolve. PWC shall also concurrently investigate each case. The Contractor agrees to furnish PWC any information regarding the claim, the actions which led to the claim and/or the investigation of the claim. Contractor shall provide their proposed response to PWC within thirty (30) calendar days of receiving the claim. Upon receipt of the response PWC 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 Contract Documents will constitute a lack of response by the Contractor, therefore validating the claim. PWC 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 PWC, result in breach of contract.
- (d) The Contractor is aware of these claims procedures and understands that it is the PWC'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 Contract Documents and allowed within the applicable statute of limitations.

Section 7.17 Delegation of Professional Design Services

- (a) Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- (b) If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, PWC will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to PWC.

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- (c) PWC shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided PWC has specified to Contractor all performance and design criteria that such services must satisfy.
- (d) Pursuant to this Section, PWC's, or its designee's, review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. PWC specifically retains final approval of such submittals.
- (e) Contractor shall not be responsible for the adequacy of the performance or design criteria specified by PWC.

Article VIII. PWC's Responsibilities

- (a) In awarding the bid to Contractor and executing the applicable Agreement, PWC acknowledges the following responsibilities:
 - (i) Except as otherwise provided in these General Conditions, PWC shall issue all communications directly to Contractor or its designee.
 - (ii) PWC may at its discretion replace Design Engineer and Project Engineer. The replacement Design Engineer or Project Engineer's status under the Contract Documents shall be that of the former Design Engineer or Project Engineer.
 - (iii) PWC shall promptly furnish the data required of PWC under the Contract Documents.
 - (iv) PWC shall make payments to Contractor when they are due as provided in the Contract Documents.
 - (v) PWC 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. PWC will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
 - (vi) Upon request of Contractor, PWC shall furnish to Contractor reasonable evidence that financial arrangements have been made to satisfy PWC's obligations under the Contract Documents (including obligations under proposed changes in the Work).
 - (vii) While at the Site, PWC's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which PWC has been informed.
 - (viii) PWC shall furnish copies of any applicable PWC safety program(s) to Contractor, which Contractor shall review and implement.

Article IX. Amending the Contract Documents; Changes in the Work

Section 9.01 Amending and Supplementing Contract Documents

- (a) The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - (i) Change Orders: If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement

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must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

- (ii) **Work Change Directives:** A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 9.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. PWC must submit any dispute or request seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
- (iii) **Field Orders:** Project Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on PWC and on Contractor, which shall perform promptly the Work involved. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

Section 9.02 PWC-Authorized Changes in the Work

- (a) Without invalidating the Agreement and without notice to any surety, PWC may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Design Engineer's recommendation when applicable and to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work as revised. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

Section 9.03 Unauthorized Changes in the Work

- (a) Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented.

Section 9.04 Change of Contract Price

- (a) The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of these General Conditions.
- (b) An adjustment in the Contract Price will be determined as follows:

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- (i) where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved; or
 - (ii) where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit as agreed to in writing by the Parties); or
 - (iii) where the Work involved is not covered by unit prices contained in the Contract Documents and the Parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work plus a reasonable Contractor's fee for overhead and profit.
- (c) Contractor's Fee: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
- (i) a mutually acceptable fixed fee; or
 - (ii) if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - 1) for unit prices, the Contractor's fee shall be fifteen percent (15%);
 - 2) for all other costs incurred, the Contractor's fee shall be five percent (5%);
 - 3) the amount of credit to be allowed by Contractor to PWC for any change that results in a net decrease in the Contract Price will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - 4) when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change.

Section 9.05 Change of Contract Times

- (a) The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 9.06.
- (b) An adjustment of the Contract Times shall be subject to the limitations set forth in these Contract Document as it concerns delays in Contractor's progress.

Section 9.06 Change Proposals

- (a) Contractor shall submit a Change Proposal to PWC to request an adjustment in the Contract Times and/or Contract Price. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
 - (i) Procedures: Contractor shall submit each Change Proposal to PWC promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to PWC within 15 calendar days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.
 - (ii) PWC Action: PWC will review each Change Proposal and, within 30 calendar days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole,

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approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing to Contractor. If PWC does not take action on the Change Proposal within 30 calendar days, then the Change Proposal is deemed denied, thereby commencing the time for appeal under these General Conditions.

- (iii) Binding Decision: PWC's decision will be final and binding unless Contractor appeals the decision.

Section 9.07 Execution of Change Orders

- (a) PWC and Contractor shall execute appropriate Change Orders covering:
 - (i) changes in the Contract Price or Contract Times that are agreed to by the parties, including any undisputed sum or amount of time for Work performed in accordance with a Work Change Directive;
 - (ii) changes in Contract Price resulting from a PWC set-off, unless Contractor has duly contested such set-off;
 - (iii) changes in the Work which are: (a) ordered by PWC, (b) required because of PWC's acceptance of defective Work or PWC's correction of defective Work, or (c) agreed to by the parties, subject to the need for Design Engineer's recommendation if the change in the Work involves the design (as set forth in the Contract Documents), or other engineering or technical matters; and
 - (iv) changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results.
- (b) If PWC or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Section, it shall be deemed to be of full force and effect as if fully executed.

Section 9.08 Notification to Surety

- (a) If the provisions of any bond require notice to be given to a surety 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 Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

Article X. Tests, Inspections, and Approvals; Correction, Removal, or Acceptance of Defective Work

Section 10.01 Access to Work

- (a) PWC, Design Engineer, their consultants and other representatives and personnel of PWC, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

Section 10.02 Tests, Inspections, and Approvals

- (a) Contractor shall give Project Engineer timely notice of readiness of the Work (or specific

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parts thereof) for all required inspections and tests and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

- (b) PWC shall retain and pay for the initial services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by PWC, except those costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 10.05.
- (c) If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish the required certificates of inspection or approval to PWC.
- (d) Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - (i) by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to PWC;
 - (ii) to attain PWC's and Design Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - (iii) by manufacturers of equipment furnished under the Contract Documents;
 - (iv) for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - (v) for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to PWC, as confirmed in writing by Project Engineer to Contractor.

- (e) If the Contract Documents require the Work (or part thereof) to be approved by PWC or its designee, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- (f) If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Project Engineer, Contractor shall, if requested by Project Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given PWC timely notice of Contractor's intention to cover the same and PWC had not acted with reasonable promptness in response to such notice.

Section 10.03 Defective Work

- (a) It is Contractor's obligation to assure that the Work is not defective.
- (b) PWC or its designee has the authority to determine whether Work is defective, and to reject defective Work.
- (c) Prompt notice of all defective Work of which PWC has actual knowledge will be given to Contractor.

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- (d) Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if PWC has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- (e) When correcting defective Work, Contractor shall take no action that would void or otherwise impair PWC's special warranty and guarantee, if any, on said Work.
- (f) In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against PWC by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if PWC and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then PWC may impose a reasonable set-off against payments due.

Section 10.04 Acceptance of Defective Work

- (a) If, instead of requiring correction or removal and replacement of defective Work, PWC prefers to accept it, PWC may do so (subject, if such acceptance occurs prior to final payment, to Design Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles and will not endanger public safety).
- (b) Contractor shall pay all claims, costs, losses, and damages attributable to PWC's evaluation of and determination to accept such defective Work (such costs to be approved by PWC as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order.
- (c) If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then PWC may impose a reasonable set-off against payments due. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to PWC.

Section 10.05 Uncovering Work

- (a) PWC has discretion to require, at its initial cost, additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- (b) If any Work is covered contrary to the written request of PWC, then Contractor shall, if requested by PWC or its designee, uncover such Work for observation, and then replace the covering, all at Contractor's expense.
- (c) If PWC considers it necessary or advisable that covered Work be observed by PWC or inspected or tested by others, then Contractor, at PWC's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as PWC may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

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- (i) If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, 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 pending Contractor's full discharge of this responsibility PWC shall be entitled to impose a reasonable set-off against payments due.
- (ii) If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 calendar days of the determination that the Work is not defective.

Section 10.06 PWC May Stop the Work

- (a) If the Work is defective, or Contractor fails to supply sufficiently skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then PWC may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of PWC to stop the Work shall not give rise to any duty on the part of PWC to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

Section 10.07 PWC May Correct Defective Work

- (a) If Contractor fails within the time specified by PWC in a written notice from PWC to correct defective Work, or to remove and replace rejected Work as required by PWC, 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, then PWC may, after seven (7) calendar days written notice to Contractor, correct or remedy any such deficiency.
- (b) In exercising the rights and remedies under this Section, PWC shall proceed expeditiously. In connection with such corrective or remedial action, PWC 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 stored at the Site or for which PWC has paid Contractor but which are stored elsewhere. Contractor shall allow PWC and its officers, employees, representatives, agents and other contractors, and Design Engineer and its employees and agents access to the Site to enable PWC to exercise the rights and remedies under this Section.
- (c) All claims, costs, losses, and damages incurred or sustained by PWC in exercising the rights and remedies under this Section will be charged against Contractor as set-offs against payments due. Such claims, costs, losses and damages will 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 Times because of any delay in the performance of the Work attributable to the exercise by PWC of PWC's rights and remedies under this Section.

Article XI. Claims

Section 11.01 Claims Process

- (a) The following disputes between PWC and Contractor shall be submitted to the Claims process set forth in this Article:
 - (i) Appeals by PWC or Contractor of Design Engineer's decisions regarding Change Proposals;
 - (ii) PWC or Contractor's demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 - (iii) Disputes that Design Engineer has been unable to address because they do not involve the design (as set forth in the Contract Documents), the acceptability of the Work, or other engineering or technical matters.

Section 11.02 Submittal of Claim

- (a) The party submitting a claim shall deliver it directly to the other party to the Agreement promptly (but in no event later than 30 calendar days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 calendar days of the decision under appeal. The responsibility to substantiate a claim shall rest with the party making the claim. In the case of a claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

Section 11.03 Review and Resolution

- (a) The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party.

Section 11.04 Dispute Resolution

- (a) 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, Design Engineer, 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) calendar 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) calendar 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

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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 Design Engineer, 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.

Article XII. Payments to Contractor; Set-Offs; Completion; Correction Period

Section 12.01 Progress Payments

- (a) The Schedule of Values will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the Project Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period. Progress payments for cost-based Work will be based on the Cost of the Work completed by the Contractor during the pay period.
- (b) Applications for Payments:
 - (i) Contractor shall submit to Project Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that PWC has received the materials and equipment free and clear, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect PWC's interest.
 - (ii) Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 - (iii) The amount of retainage for progress payments will be as stipulated in the Contract Documents.
- (c) Review of Applications:
 - (i) Project Engineer will, within ten (10) Business Days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of

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payment and present the Application to PWC, or return the Application to Contractor indicating in writing Project Engineer's reason(s) for refusing to recommend payment. In the latter case, the Contractor may make the necessary corrections and resubmit the Application.

- (ii) Project Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Project Engineer to PWC, based on Project Engineer's observations of the executed Work, and on Project Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Project Engineer's knowledge, information, and belief:
 - 1) the Work has progressed to the point indicated;
 - 2) 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 Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work, and any other qualifications stated in the recommendation); and
 - 3) the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Project Engineer's responsibility to observe the Work.
- (iii) By recommending any such payment Project Engineer will not thereby be deemed to have represented that:
 - 1) inspections made to check the quality 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
 - 2) there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by PWC or entitle PWC to withhold payment to Contractor.
- (iv) 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:
 - 1) to supervise, direct, or control the Work, or
 - 2) for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - 3) for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - 4) to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price.
- (v) 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 PWC outlined in this Section.
- (d) Project Engineer will recommend reductions in payment (set-offs) necessary in Project Engineer's opinion to protect PWC from loss because:
 - (i) the Work is defective, requiring correction or replacement;
 - (ii) the Contract Price has been reduced by Change Orders;
 - (iii) PWC has been required to correct defective Work or has accepted defective Work in

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- accordance with these General Conditions;
- (iv) PWC has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - (v) Project Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.
- (e) Payment Becomes Due:
- (i) Twenty (20) Business Days after presentation of the Application for Payment to PWC with Project Engineer's recommendation, the amount recommended (subject to any PWC set offs) will become due, and when due will be paid by PWC to Contractor.
- (f) Reductions in Payment by PWC:
- (i) In addition to any reductions in payment (set-offs) recommended by Project Engineer, PWC is entitled to impose a set-off against payment based on any of the following:
 - 1) PWC has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - 2) Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - 3) Contractor has failed to provide and maintain required bonds or insurance;
 - 4) PWC has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - 5) PWC has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - 6) the Work is defective, requiring correction or replacement;
 - 7) PWC has been required to correct defective Work or has accepted defective Work in accordance with the Contract Documents;
 - 8) the Contract Price has been reduced by Change Orders;
 - 9) an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - 10) liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or Completion of the Project; or
 - 11) there are other items entitling PWC to a set off against the amount recommended.
 - (ii) If PWC imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Project Engineer, PWC will give Contractor immediate written notice stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. PWC shall promptly pay Contractor the amount so withheld, or any adjustment agreed to by PWC and Contractor if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 - (iii) Upon a subsequent determination that PWC's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due and subject to interest as provided in the Contract Documents.

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Section 12.02 Substantial Completion

- (a) When Contractor considers the entire Work ready for its intended use Contractor shall notify PWC and Design Engineer in writing that the entire Work is substantially complete and request that PWC acknowledge in writing that Contractor has met Substantial Completion.
- (b) Promptly after Contractor's notification, PWC, Contractor, and Design Engineer shall make an inspection of the Work to determine the status of completion. If PWC does not consider the Work substantially complete, PWC will notify Contractor in writing giving the reasons therefor. PWC shall thereafter submit to Contractor an initial draft of punch list items to be completed or corrected before final payment.
- (c) If Design Engineer considers the Work substantially complete, Design Engineer will deliver to PWC a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Design Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. PWC shall have seven (7) Business Days after receipt of the preliminary certificate to make written objection to Design Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, PWC concludes that the Work is not substantially complete, PWC will, within fourteen (14) calendar days after submission of the preliminary certificate to PWC, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor.
- (d) At the time of receipt of the preliminary certificate of Substantial Completion, PWC and Contractor will confer regarding PWC's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by PWC. Unless PWC and Contractor agree otherwise in writing, PWC shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon PWC use or occupancy of the Work.
- (e) After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment and shall complete such items within the time specified by PWC. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- (f) PWC shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

Section 12.03 Partial Use or Occupancy

- (a) Prior to Substantial Completion of all the Work, PWC may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which PWC, Design Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by PWC for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

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- (i) At any time PWC may request in writing that Contractor permit PWC to use or occupy any such part of the Work that PWC believes to be substantially complete.
- (ii) At any time Contractor may notify PWC and Design Engineer in writing that Contractor considers any such part of the Work substantially complete and request Design Engineer to issue a certificate of Substantial Completion for that part of the Work.
- (iii) Within a reasonable time after either such request, PWC, Contractor, and Design Engineer shall make an inspection of that part of the Work to determine its status of completion. If Design Engineer does not consider that part of the Work to be substantially complete, Design Engineer will notify PWC and Contractor in writing giving the reasons therefor.
- (iv) No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements regarding builder's risk or other property insurance.

Section 12.04 Final Inspection

- (a) Upon written notice from Contractor that Completion of the Project has been achieved or an agreed portion thereof is complete, PWC will promptly make a final inspection with Project Engineer, Design Engineer, and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

Section 12.05 Final Payment

- (a) Application for Payment:
 - (i) After Contractor has, in the opinion of PWC, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents, and other documents, Contractor may make application for final payment.
 - (ii) The final Application for Payment shall be accompanied (except as previously delivered) by:
 - 1) all documentation called for in the Contract Documents;
 - 2) consent of the surety, if any, to final payment;
 - 3) satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to PWC free and clear or will so pass upon final payment;
 - 4) a list of all disputes that Contractor believes are unsettled; and
 - 5) complete and legally effective releases or waivers (satisfactory to PWC) required by the Contract Documents.
 - (iii) If Design Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Design Engineer will, within ten (10) Business Days after receipt of the final Application for Payment, indicate in writing Design Engineer's recommendation of final payment and present the Application for Payment to PWC for payment. Such recommendation shall account for any set-offs against payment that are necessary in Design Engineer's opinion to protect PWC from loss for the reasons stated above with respect to progress payments. At the same time Design Engineer will also give written notice to PWC and Contractor that the Work is acceptable and that

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Completion of the Project has been achieved. Otherwise, Design 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.

- (iv) Within thirty (30) calendar days after the presentation to PWC of the final Application for Payment and accompanying documentation, the amount recommended by Design Engineer (less any further sum PWC is entitled to set off against Design Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by PWC to Contractor.

Section 12.06 Waiver of Claims

- (a) The making of final payment will not constitute a waiver by PWC of claims or rights against Contractor. PWC expressly reserves claims and rights arising from defective Work appearing after final inspection, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from Contractor's indemnification obligations, or from Contractor's continuing obligations under the Contract Documents.
- (b) The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against PWC other than those pending matters that have been duly submitted or appealed under the provisions of the Contract Documents.

Section 12.07 Correction Period

- (a) If within one (1) year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to PWC and in accordance with PWC's written instructions:
 - (i) correct the defective repairs to the Site or such other adjacent areas;
 - (ii) correct such defective Work;
 - (iii) if the defective Work has been rejected by PWC, remove it from the Project and replace it with Work that is not defective, and
 - (iv) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- (b) If Contractor does not promptly comply with the terms of PWC's written instructions, or in an emergency where delay would cause serious risk of loss or damage, PWC may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. 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 repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- (c) In special circumstances where a particular item of equipment is placed in continuous

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service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date only as provided in the Contract Documents.

- (d) Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Article XII, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- (e) Contractor's obligations under this Article XII are in addition to all other obligations and warranties. The provisions of this Article XII shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

Article XIII. Suspension of Work and Termination

Section 13.01 PWC May Suspend Work

- (a) At any time and without cause, PWC may suspend the Work or any portion thereof for a period of not more than 90 consecutive calendar days by written notice to Contractor and Design Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than thirty (30) calendar days after the date fixed for resumption of Work.

Section 13.02 PWC May Terminate for Cause

- (a) The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - (i) Contractor's continued failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
 - (ii) Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - (iii) Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - (iv) Contractor's repeated disregard of the authority of PWC, Project Engineer, or Design Engineer.
- (b) If one or more of the events identified in Paragraph 13.02(a) occurs, then after giving Contractor (and any surety) ten (10) calendar days written notice that PWC is considering a declaration that Contractor is in default and termination of the Agreement, PWC may proceed to:
 - (i) declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 - (ii) enforce the rights available to PWC under any applicable performance bond.
- (c) Subject to the terms and operation of any applicable performance bond, if PWC has terminated the Contract for cause, PWC may 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 PWC has paid Contractor but which are stored elsewhere, and complete the Work as PWC may deem expedient.

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- (d) PWC may not proceed with termination of the Contract under Paragraph 13.02(b) if Contractor within seven (7) calendar days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure and such efforts are agreed to by PWC.
- (e) If PWC proceeds as provided in Paragraph 13.02(b), Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by PWC, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to PWC. Such claims, costs, losses, and damages incurred by PWC will be reviewed by PWC as to their reasonableness and, when so approved by PWC, incorporated in a Change Order.
- (f) Where Contractor's services have been so terminated by PWC, the termination will not affect any rights or remedies of PWC against Contractor then existing or which may thereafter accrue, or any rights or remedies of PWC against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by PWC will not release Contractor from liability.
- (g) The provisions of any applicable payment or performance bond shall govern over any inconsistent provisions of this Section.

Section 13.03 PWC May Terminate For Convenience

- (a) Upon seven (7) calendar days written notice to Contractor, PWC may, without cause and without prejudice to any other right or remedy of PWC, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - (i) 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;
 - (ii) 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; and
 - (iii) other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- (b) Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

Section 13.04 Contractor May Stop Work or Terminate

- (a) If, through no act or fault of Contractor, (1) the Work is suspended for more than ninety (90) consecutive calendar days by PWC or under an order of court or other public authority or (2) PWC fails for sixty (60) calendar days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven (7) calendar days written notice to PWC, and provided PWC does not remedy such suspension or failure within that time, terminate the Contract and recover from PWC payment on the same terms as provided in this Article.

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- (b) In lieu of terminating the Contract and without prejudice to any other right or remedy, if PWC 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 PWC, 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 submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

Section 13.05 Morality

- (a) If, in the sole opinion of PWC, at any time Contractor or any of its owner(s) or employee(s) or agent(s) (each party, owner, employee, and agent is an "Actor") engages in any one or more actions that bring disrepute, contempt, scandal, or public ridicule to the Actor or subject the Actor to prosecution or offend the community or public morals or decency or denigrate individuals or groups in the community served by PWC or are scandalous or inconsistent with community standards or good citizenship or may adversely affect PWC's finances, public standing, image, or reputation or are embarrassing or offensive to PWC or may reflect unfavorably on PWC or are derogatory or offensive to one or more employee(s) or customer(s) of PWC, PWC may immediately upon written notice to Contractor terminate the Agreement, in addition to any other rights and remedies that PWC may have pursuant to the Contract Documents or at law or in equity.

Article XIV. Miscellaneous

Section 14.01 Additional General Terms and Conditions

- (a) Contractor shall be subject to any additional terms and conditions for this Project as set forth in the applicable Appendices as specific in the Agreement, which is incorporated by reference as if set forth word-for-word herein.

Section 14.02 Giving Notice

- (a) Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - (i) delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended;
 - (ii) delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice; or
 - (iii) sent to PWC or Contractor's designee(s) via email, with a confirmation of receipt.

Section 14.03 Computation of Times

- (a) When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

Section 14.04 Cumulative Remedies

General Conditions

- (a) The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties 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. 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.

Section 14.05 Limitation of Damages

- (a) With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither PWC nor Design Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

Section 14.06 No Waiver

- (a) A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or any other provision of the Contract Documents.

Section 14.07 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 Agreement or termination of the services of Contractor.

Section 14.08 Controlling Law

- (a) The Agreement shall be governed by the law of the State of North Carolina.

Section 14.09 Headings

- (a) Article and paragraph headings, numbers, and letters are inserted for convenience only and do not constitute parts of these General Conditions.

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: BUCKHEAD SUBDIVISION WATER MAIN LOOPING

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

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

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

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

Executed in _____ counterparts.

Witness:

(Proprietorship 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)

PAYMENT 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: BUCKHEAD SUBDIVISION WATER MAIN LOOPING

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

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

NOW THEREFORE, if the Principal shall 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.

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

Executed in _____ counterparts.

Witness:

CONTRACTOR:

(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)

**POWER OF ATTORNEY
(ATTACH)**

**CERTIFICATE(S) OF INSURANCE
(Attach)**

NOTICE TO PROCEED

TO: _____

Date: _____

PROJECT: **BUCKHEAD SUBDIVISION WATER MAIN LOOPING**

You are hereby notified to commence work in accordance with the Contract dated _____, 2023, on or before _____, 2023, and you are to complete the WORK within the **contract period** thereafter. The date of final completion therefore is _____.

FAYETTEVILLE PUBLIC WORKS COMMISSION

BY: _____

Tanga Anderson-Solomon
Procurement Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged this the _____ day of _____, 2023.

(CONTRACTOR)

BY: _____

TITLE: _____

- END OF SECTION -

SECTION C - ADMINISTRATIVE PROVISIONS

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01000 – SUPPLEMENTARY CONDITIONS

ADMINISTRATIVE

DEFINITIONS & TERMINOLOGY

1. “Contract Documents”-The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), Contractor’s Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and Engineer’s written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents.
2. “Owner” - Fayetteville Public Works Commission
3. “PWC Project Coordinator”- PWC employee that is observing and inspecting the Contractor’s Work onsite.

1. PURPOSE

These Supplementary Conditions are intended to supplement and amplify the Technical Specifications and other requirements of this Contract. Where any article or item of the Contract Documents is modified or deleted by this document, the remaining unaltered provisions of that article, paragraph, subparagraph, or clause shall remain in effect. In the event of a conflict, these Supplementary Conditions shall take precedence.

Unless otherwise noted, all items in these Supplemental Conditions shall be considered incidental to the Work, and no additional payment will be made for costs associated with these items.

2. ORDER OF PRECEDENCE

Except as may be otherwise specifically stated in these Contract Documents, the following order of precedence shall be adhered to for resolving any conflict, error, ambiguity, or discrepancy between the provisions of these Contract Documents:

1. Any addendum issued prior to the opening of Bids.
2. The Construction Agreement, including PWC’s General Conditions
3. Section 01000 – Supplementary Conditions
4. Section 01025 – Measurement and Payment
5. Approved Drawings
6. Fayetteville Public Works Commission Standard Details
7. Fayetteville Public Works Commission Technical Specifications

3. AVAILABILITY

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).

It is expected that the Contractor will remain in the project area for the duration of the Contract.

4. SUBMITTALS

The Contractor shall not perform any portion of the Work requiring submittal and review until the respective submittal has been approved by Fayetteville Public Works Commission. Work performed prior to review and acceptance shall be at the Contractor's risk.

The Contractor shall submit the following information to Fayetteville Public Works Commission prior to commencing the first section of work.

The Contractor shall provide submittals, in accordance with the General Conditions, on but not limited to the following:

- A sample door hanger, notifying the residents of the project and those times that the resident may not have sewer service.
- Specifications (shop drawings, SDS, etc.) on the proposed materials to be used
- Certified test reports that the proposed materials for this Contract were manufactured and tested in accordance with the specified American Society for Testing Materials (ASTM)
- Contractor's safety plan
- Contractor personnel emergency contact information
- Labor and Equipment rates
- Property owner agreement if applicable (sample agreements and executed agreements)
- Traffic Control Plans, Pre-construction
- Video / Pictures
- Proposed project schedule.
- Erosion Control measures

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

5. PROJECT SCHEDULE

Each week, the Contractor shall provide (via email) PWC with their schedule for the upcoming week. The Contractor shall contact the PWC Project Coordinator on a daily basis, to confirm their schedule for that day. The Contractor shall immediately notify PWC of any deviations to their schedule. Failure to notify PWC of any deviations may result in payment being withheld.

The weekly schedule can be in spreadsheet format or done in a scheduling software, such as Microsoft Project.

6. PRE-CONSTRUCTION VIDEO

The Contractor shall complete a pre-construction video inspection of the project area, to document pre-existing conditions. The video shall be in a playable electronic video format (i.e., AVI, WM, .MOV, .MP4) on a standard portable digital media (USB Flash Drive or USB

Hard Drive). The intent of this video is to document the roadside and/or easement conditions, easement areas, the driveways, the condition of the curb and gutter, the condition of the mailboxes, retaining walls, fences and gates, any other resident installed improvements, and the condition of the sod. It is advised that the video start on one side of the street, proceed to an intersection and then return down the other side. An additional pass showing the road centerline from a high viewing angle is preferred but not necessary. The Contractor shall include any easement areas, especially those passing through yards, driveways, etc. The video must identify the house number and the street name in the audio track and visually. The video must be accompanied by an index sheet identifying the streets of the project by time position on the video. The Contractor may also include any pre-existing conditions they want brought to the attention of the PWC Project Engineer by including notes and time position on the index sheet. The Contractor can also include still pictures of the areas, for additional documentation. Two copies of the video and any other accompanying data shall be submitted to the PWC Project Engineer before the first payment application can be released and the cost for the video shall be incidental.

7. GUARANTEE

All work completed under these Contract Documents shall be guaranteed by the Contractor for a period of five (5) years from the date of final acceptance. During that period, all serious defects discovered in the work, as determined by Fayetteville Public Works Commission, shall be removed, and replaced in a satisfactory manner by the Contractor at no cost to Fayetteville Public Works Commission.

8. PRECONSTRUCTION MEETING

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.

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.

9. WORKING TIMES

Regular working hours shall not exceed 40 hours per week, 8 hours per day (between the hours of 8:00 a.m. and 5:00 p.m.) Monday through Friday, unless otherwise approved by PWC. No work is permitted on legal holidays (to include holiday weekends). Adjustments in work schedules are also anticipated to accommodate the residents.

The Contractor shall plan their daily activities in order to ensure that all work is completed by 5:00 pm. This provision will be strictly enforced by PWC.

10. MONTHLY PROGRESS MEETINGS

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 Fayetteville Public Works Commission complex at 955 Old Wilmington Road and will generally last about an hour. The Contractor's superintendent or designated representative shall attend these meetings. The Contractor's representative shall be knowledgeable of the project, issues that need to be addressed, and be able to make binding decisions for the Contractor.

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 schedule for the upcoming month, issues that the Contractor and/or the PWC Project Engineer need to address.

The cost for the Contractor's representative to attend the monthly meetings shall be included in the unit prices bid.

PROJECT SITE REQUIREMENTS

11. OFFICE FACILITIES

The Contractor shall provide at his expense telecommunications via cellular phone at all times on the job site. The Project Superintendent must be onsite and accessible by telephone at all times while work is progressing. The Project Superintendent shall have access to plans, contract documents, permits, and encroachment agreements at all times whether an office facility is provided by the Contractor or not.

12. LIMITS OF CONSTRUCTION

The Contractor shall confine their operations to the existing permanent easements or the existing street rights-of-way. The Contractor shall coordinate with Fayetteville Public Works Commission to confirm the size and location of the existing permanent easement(s).

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

13. ACCESS

The Contractor shall be responsible for constructing the necessary access needed to complete the project as outlined in these Contract Documents. Groundwater and soil conditions can vary depending on the season, and the amount of rainfall and may impact access. The Contractor shall confine their access requirements to public rights-of-way or permanent easements, wherever possible. Fayetteville Public Works Commission will aid in attempting to gain permission to cross private property, in the event it is necessary. The Contractor shall coordinate with Fayetteville Public Works Commission a minimum of two (2) weeks in advance, in order to gain such access.

Prior to completing any work on private property that is outside of a permanent easement, the Contractor shall obtain an agreement with that property owner. Further, the Contractor shall complete a pre-construction video inspection of the property. It is recommended that the pre-construction video document existing conditions of the areas adjacent to the proposed work area.

All access that is constructed on private property shall be removed and the property restored to existing or better condition than before construction commenced. The Contractor shall be responsible for obtaining a signed release from the affected property owner(s), stating that the property has been satisfactorily restored. Final payment shall not be released until all signed releases are obtained and submitted to Fayetteville Public Works Commission.

Access constructed in permanent easements shall remain, unless otherwise instructed by Fayetteville Public Works Commission.

Fayetteville Public Works Commission shall be responsible for clearing the existing permanent easement right-of-way, should it be necessary. The Contractor shall provide Fayetteville Public Works Commission with a minimum of two (2) weeks' notice for any easement clearing.

14. EQUIPMENT

The Contractor shall be equipped with equipment perfectly adaptable for the type of construction required. Fayetteville Public Works Commission reserves the right to deny the use of inadequate equipment or of equipment not capable of performing the work in an acceptable manner.

With respect to the foregoing, it is the intent of Fayetteville Public Works Commission to require that the Contractor be equipped to perform the work shown and specified, expeditiously and in accordance with the best modern practice.

15. SITE LAYOUT AND STAKING

Construction staking will be performed by the Design Engineer who will also prepare and furnish construction cut sheets to PWC 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.

Utilities shall be installed at the locations and elevations indicated on the cut sheets unless otherwise approved by the Owner. Should a conflict arise between the Drawings and the cut sheets, the cut sheets shall take precedence. Contractor shall make the PWC Project Coordinator aware of any conflict between the Drawings and the cut sheets as soon as it is discovered. The Contractor shall verify invert elevations of all water mains, sewer mains, water laterals, sewer laterals, and manholes by instrument.

16. PROJECT SIGN

The project sign(s) shall be submitted, approved, and installed prior to the start of construction activities. The Contractor shall install a project sign(s) within the project limits in the locations(s) shown on the plans or as directed by PWC, at no additional cost.

17. JOBSITE REQUIREMENTS

In addition to requirements outlined in these Contract Documents, the following are mandatory requirements that will be strictly enforced:

- Posted speed limits shall be strictly adhered to. No speeding.
- Driveways shall not be blocked without prior notification and coordination with the resident.
- To the maximum extent possible, one lane of traffic shall be maintained at all times.
- Excess soil, stone, equipment, materials, etc. in the road or along the right-of-way shall be removed at the end of each workday. Soil, stone, millings, pipe, etc., shall not be stored or stockpiled in the road right-of-way.
- All trenches, excavations, or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
- Mailboxes and traffic signs shall be only removed as necessary to facilitate the installation of the Work and shall be reinstalled during the same day of removal. Any damages to mailboxes, signs or posts shall be repaired by the Contractor at no cost to PWC.
- Portable toilets shall be provided for workers. These facilities shall be placed discretely out of public view, kept clean, and orderly.

- Contractor(s) shall not enter onto private property for the purpose of using water or electricity without the written permission of the property owner.
- The use of profane or abusive language or obscene gesturing by workmen will not be tolerated and will be just cause for immediate dismissal from the project site as directed by PWC or its authorized representative.
- OSHA safety measures are to be maintained at all times.
- An English-speaking Contractor's representative is required for each separate work crew.
- Do not litter at any time.
- Respond to all complaints within 24 hours.
- Wear proper protective clothing (hard hats, shoes, shirts, etc.). Personnel must wear an approved safety vest at all times while working on PWC's project.
- During the installation of the utilities, the excavated material may be temporarily stockpiled adjacent to the work area. In no case shall stockpiled material be allowed to remain for a period of time exceeding the workday.
- The trench shall be completely backfilled at the end of each workday.
- If construction is temporarily halted during the workday, the open trench shall be manned continuously.
- Damage to sod and/or grass along the street right-of-way due to (but not limited to) temporarily stockpiled material, construction travel and other construction related activities shall be replaced with sod at the Contractor's sole expense.

18. STAGING AREAS

The Contractor shall be required to secure staging areas for storing materials, equipment, etc. All costs, such as rent, restoration, erosion control measures, and permit fees (including Temporary Use Permit by the City of Fayetteville), shall be the responsibility of the Contractor. The location and operation of the staging yard shall comply with all applicable Federal, State, and local regulations.

All staging areas will be subject to inspection by Fayetteville Public Works Commission, or agents thereof, for compliance with this section without prior notice. Any deficiencies will be documented by Fayetteville Public Works Commission and written notice will be given to the Contractor in accordance with these Contract Documents. The Contractor shall rectify any deficiencies in a reasonable time. Failure to do so will result in breach of contract.

The Contractor will submit a Staging Area Operation Plan for each site consisting at a minimum of the following:

- The layout of each staging area clearly identifying use areas and sufficient in detail and scale to indicate the proximity of activity to adjacent residences and businesses.
- Transportation plan including routes for both ingress and egress.
- Dust control measures both on site and along transportation routes necessary to minimize the transmission of material onto streets used for ingress and egress.
- Fuel and hazardous material storage and management. Total secondary containment shall be used for fuel and liquid hazardous materials storage and to prevent spillage.
- Hours of operation and noise mitigation measures.
- Application and Fee for the Temporary Use Permit.
- Application and Fee for Truck Route Permit.

The Contractor shall submit to PWC the application for the Temporary Use Permit, Truck Route Permit, and Staging Area Operation Plan. Upon acceptance by PWC, the applications shall be submitted to the City of Fayetteville by PWC for review and approval.

The Contractor shall obtain a signed agreement for the staging area in accordance with the General Conditions of these Contract Documents. Upon the completion of the project the Contractor shall obtain a signed release from the property owner for the satisfactory completion and restoration prior to issuance of final payment. The Contractor shall take all necessary measures to establish permanent ground cover on the staging area, prior to obtaining a signed release from the property owner. Restoration of the staging area and establishment of permanent ground cover shall be in accordance with the approved erosion control plan. All erosion control measures shall remain in place until the permanent ground cover is established. Restoration of the staging area shall be at the Contractor's sole expense and shall not constitute additional compensation.

19. STORED MATERIALS

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

20. CLEANLINESS DURING CONSTRUCTION

The Contractor shall perform a daily clean-up of all dirt, debris, scrap materials and other items resulting from their operations. No open accumulation of refuse, surplus or scrap materials will be permitted. The Contractor shall legally dispose off-site all waste materials and other excess materials resulting from construction.

Failure of the Contractor to maintain a clean site will be basis for Fayetteville Public Works Commission to issue a written notice of non-compliance with the Contract. Should that notice to correct not be complied with within twenty-four (24) hours, Fayetteville Public Works Commission may authorize the cleanup to be performed by others and the costs shall be deducted from monies due the Contractor. The Contractor shall legally dispose off-site all waste materials and other excess materials resulting from the Work. No separate payment shall be made for maintaining a clean project site.

21. DUST CONTROL

The Contractor shall control the dust in all areas of the project, including staging yard and haul routes for the entire duration of the Contract. The Contractor shall have a water truck, sweeper, and a roller on-site at all times with trained personnel to operate the equipment. Watering and/or sweeping the streets shall be required as conditions dictate, or as required by PWC. The sweeping operation shall direct all materials towards the disturbed areas and not into residential yards. Should the Contractor fail to provide adequate dust control, the Owner reserves the right to stop work and/or refuse to process the Contractor's pay applications until the Contractor installs adequate dust control measures. No separate payment will be made for the control of dust.

22. RESPONSIBILITY FOR MATERIAL

All pipe, fittings, manholes, 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 conforms to the specifications. It is the Contractor's responsibility to verify all materials and dimensions before beginning Work. All materials shall be subject to inspection by PWC. Materials found to be defective shall be clearly marked and removed from the project.

23. COLLATERAL DAMAGE

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

Collateral damage areas are locations where the Contractor's equipment, spoil piles, materials, etc., have disturbed lawns and other areas outside of their work. All collateral damage not in asphalt shall be sodded back at the Contractor's expense. Damaged trees shall be trimmed and treated with a tree dressing.

Any damage to asphalt during construction that is outside of the trench limits or has not been previously identified by the City of Fayetteville or the PWC Project Engineer as failing shall be considered collateral damage and patch paved in accordance with these Contract Documents at no cost to the Owner.

PUBLIC RELATIONS, CUSTOMER SERVICE, NOTIFICATIONS

24. CONTRACTOR'S DUTY AND OBLIGATION TO THE PUBLIC

The Contractor at all times shall conduct the work in such a manner as to ensure the least obstruction to traffic practicable. The convenience of the general public and of the residents and businesses along and adjacent to the street(s) shall be provided for in a satisfactory manner, consistent with the operation and local conditions. The Contractor shall construct and maintain any necessary ramps, boardwalks, or other means to maintain pedestrian traffic. Costs for such work shall be incidental to the unit prices bid. The Contractor shall at all times cooperate with the public and merchants affected by the construction operations and shall maintain good public relations at all times.

The Contractor shall schedule and stage construction in a sequence to minimize disruption to The largest number of residents/businesses 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, if applicable.

The Contractor shall contact the business Owners to determine the optimum time for conducting their operations. The Contractor shall schedule their operations to minimize the likelihood of equipment operating throughout the night and/or on weekends in residential areas. The Contractor shall remove their equipment from the yards of residents at the end of each workday. Equipment shall not be left in yards, overnight, or during weekends, unless the Contractor has specific written permission from the property owner.

The Contractor shall fully coordinate their operations and schedule with PWC.

25. CUSTOMER SERVICE

The Contractor is expected to make every effort to reduce the impact of their operation to Fayetteville Public Works Commission's operation and maintenance of the water and sewer system, and the affected customers within the project area. Full cooperation and coordination with Fayetteville Public Works Commission personnel and customers is expected. It is expected that the Contractor will promptly respond to any concerns voiced by residents and/or Fayetteville Public Works Commission personnel and make every effort to resolve them immediately. Should the Contractor be unable to resolve the issue, the Contractor shall promptly notify Fayetteville Public Works Commission. Such notification shall include the person's name, address, nature of complaint, and the Contractor's proposed remedy. Providing exemplary customer service shall be incidental to this Contract, and no additional payment will be made for this service.

The Contractor at all times shall conduct the work in such a manner as to ensure the least

obstruction to traffic practicable. The convenience of the general public and of the residents and businesses along and adjacent to the Work shall be provided for in a satisfactory manner, consistent with the operation and local conditions. The Contractor shall construct and maintain any necessary ramps, boardwalks, or other means to maintain pedestrian traffic. Costs for such work shall be incidental to the unit prices bid. The Contractor shall at all times cooperate with the public and merchants as affected by the construction operations and shall endeavor to maintain good public relations at all times.

The Contractor shall make every effort to minimize the impacts of their operation on the businesses and/or residents. The Contractor shall contact the business Owners to determine the optimum time for conducting their operations. The Contractor shall schedule their operations to minimize the likelihood of equipment operating throughout the night and/or on weekends in residential areas. The Contractor shall remove their equipment from the yards of residents at the end of each workday. Equipment shall not be left in yards, overnight, or during weekends, unless the Contractor has specific written permission from the property owner.

The Contractor shall fully coordinate their operations and schedule with Fayetteville Public Works Commission.

26. PUBLIC SAFETY

The Contractor shall barricade all work, roads, etc. to keep the public away from the construction. The Contractor shall provide protection to all portions of the Work when the work is not in progress. The Contractor shall provide and install all measures necessary to protect the public. Damage due to the lack of proper protection shall be the Contractor's sole responsibility.

27. CUSTOMER NOTIFICATION

Whenever the customer's use of the sanitary sewer must be interrupted by the Work, the Contractor shall notify the customers a minimum of two (2) business days 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. The Contractor shall make every effort to minimize inconvenience to the public and customers.

Service interruptions to customers shall be limited to no more than eight (8) hours at any given time.

The notifications shall describe the work to be undertaken and approximate dates of the work. The notifications shall clearly indicate the dates and times of the work. The text of the notifications shall be approved by Fayetteville Public Works Commission in advance. The Contractor shall notify The PWC Project Coordinator each time such notification is issued to the customers.

28. RESIDENT NOTIFICATION OF WORK

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 Fayetteville Public Works Commission – without consent from the property owner and the PWC Project Coordinator. The Contractor shall coordinate with the PWC Project Coordinator to notify residents a minimum of one (1) week in advance of the need to work in these areas.

If there are assigned areas that will require the Contractor to access areas that are deemed private or personal (regardless of easements or rights-of-way held by PWC), the Contractor shall coordinate with the PWC Project Engineer to issue letters to the affected property owners. Those notification letters will be prepared and issued by PWC. The Contractor shall coordinate with PWC so that the letters may be sent a minimum of 30 days before beginning any work in the area. The Contractor shall coordinate their schedule with PWC so that the information provided in the notification letters is as accurate as possible. Once the schedule has been established, the Contractor shall continually update PWC and the affected property owners of any changes to that schedule.

Communication and coordination with PWC and the property owners is an expectation of this Contract and will be used as a basis for determining if the Contract should be renewed. PWC prides itself on being customer oriented and it is the expectation that the Contractor will keep the customers (property owners) fully informed of their schedule.

29. RESIDENTIAL/COMMERCIAL COMPLAINTS

Fayetteville Public Works Commission' Complaint Resolution Procedure shall be followed throughout the duration of the Contract. The Contractor is required to maintain good public relations and to provide timely notifications to residents so as to minimize inconvenience and complaints.

Fayetteville Public Works Commission has an established protocol for addressing residents' 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 Fayetteville Public Works Commission to address resident complaints. The Contractor shall inform his personnel and subcontractor personnel that all complaint issues be directed to the PWC Project Coordinator and the Contractor's Superintendent. The PWC Project Coordinator shall be present in all meetings with residents. Should Fayetteville Public Works Commission determine the Contractor(s) non-responsive in addressing complaints, Fayetteville Public Works Commission reserves the right to withhold progress payments until the complaint has been satisfied. The Contractor shall immediately notify the PWC Project Coordinator of any complaint received.

PERMITS-AGREEMENTS-ENCROACHMENTS/EASEMENTS

30. WATER DISTRIBUTION CONSTRUCTION PERMITS

PWC has issued a water permits for construction of the water main. A copy of the permit is included in the Appendix A.

The permit placard will be delivered to the Contractor at the pre-construction meeting. The Contractor shall post the water permit placard on site and shall have a copy of the permitted set of plans on site at all times.

The Contractor shall make the approved, permitted plans available for inspection by Fayetteville Public Works Commission staff.

31. TRUCK ROUTE PERMIT

The Contractor will be required to obtain a Truck Route Permit from the City of Fayetteville and will be required to bond those City streets outside the project limits utilized for construction activities and/or deliveries. It is anticipated that the City will require a \$25,000 bond for the truck route permit. The cost of the bond shall be included in the Contractor's bid prices and shall not be paid for separately. The Truck Route Permit Application and fee shall be submitted to PWC for forwarding to the City. The Contractor shall keep a copy of the approved permit at the jobsite and shall make it available to the City personnel.

32. BULK WATER USAGE

Fayetteville Public Works Commission will allow the Contractor to use water from its existing water system.

A Bulk Water Hauler (BWH) permit must be purchased from the PWC Customer Service Center (955 Old Wilmington Road). The permit inspection and permit issuance will be conducted at the PWC Environmental Inspection Office between 8:00 am and 10:00 am, Monday through Friday. The PWC Environmental Inspection Office is located in Building #13 the PWC Cross Creek Water Reclamation Facility (601 N. Eastern Blvd).

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.

The Contractor shall provide documentation on the amount of water used for operations and shall provide a monthly statement to the PWC Project Coordinator.

All BWH permits expire on January 31 regardless of when they were purchased. The Contractor shall renew the permit each year to keep it current for the duration of this Contract.

The Contractor shall utilize proper backflow prevention devices when obtaining water from Fayetteville Public Works Commission's system.

33. AGREEMENTS WITH PROPERTY OWNERS

Any and all agreements between the Contractor and individual property owners for work services, rent of staging areas, etc. located outside of any easements or public rights-of way shall not obligate the City of Fayetteville or Fayetteville Public Works Commission in any manner. Prior to performing any work on private property, which could remotely infer the Contractor acting on behalf of Fayetteville Public Works Commission, the Contractor shall furnish to Fayetteville Public Works Commission a signed and witnessed statement executed by the property owner acknowledging that the City of Fayetteville and Fayetteville Public Works Commission 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 Fayetteville Public Works Commission from all claims, damages, etc. Additionally, all agreements/actions by Subcontractors shall be the Contractor's responsibility to secure the property owner's agreement as described herein.

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 Fayetteville Public Works Commission with the final pay application.

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

34. RIGHTS-OF-WAY AND/OR EASEMENTS

Deeds, grants, encroachment permits, and rights-of-way easements for necessary property will be secured by PWC. Any additional access right-of-way shall be the responsibility of the Contractor. The Contractor shall be liable for all damages resulting from access usage.

If Work is delayed by reason of the inability of PWC to promptly secure the necessary property or rights-of-way, the Contractor shall have no claim for loss due to such delays. The Contractor will be required to work in areas where easements have been secured and stopping work to move to various locations may be required. No payment shall be made for any mobilizations within the project limits. If the PWC Project Engineer determines work cannot continue, the Contractor shall have no claim for loss due to such delays, but the time of completion may be extended accordingly.

The Contractor shall locate the limits of the rights-of-way, or property lines prior to beginning construction and shall not encroach beyond those limits. The Contractor shall be solely responsible for any damage to property resulting from failing to locate these limits prior to beginning construction.

If PWC has not obtained all of the required easements at the time of advertisement, a list of those properties where an easement has not been obtained will be located in Volume I of these Contract Documents. The Contractor shall not enter those properties where easements are not obtained. Once the easements have been obtained, PWC will notify the Contractor. Any special conditions resulting from the easement acquisition will be provided to the Contractor in writing. The Contractor shall comply with all easements special conditions.

EXECUTION-CONSTRUCTION

35. EROSION AND SEDIMENTATION CONTROL

The provisions of The Sedimentation Pollution Control Act of 1973 as implemented by Title 15, N.C. Administrative Code, Chapter 4, Sedimentation Control, Subchapters 4A, 4B and 4C as amended (5 NCAC 4A, 4B, and 4C), shall be applicable to this project.

Minimum requirements for erosion control are shown on the Drawings, based on anticipated construction methods. The Contractor shall progressively adjust and/or add erosion control measures to complement their type of construction to prevent erosion and the transmittal of silt. All necessary erosion control measures shall be installed prior to any work. The installed erosion control measures shall remain serviceable until the site is restored and stabilized. Upon such time (which may be after completion of the project), the Contractor shall remove all temporary measures.

All fees, penalties, fines for non-compliance and all civil actions resulting there from shall be the Contractor's responsibility and shall in no way involve Fayetteville Public Works Commission. The Contractor shall immediately notify Fayetteville Public Works Commission of any fine, penalty, or notice of non-compliance by the North Carolina Department of Environmental Quality (NCDEQ). The Contractor may be required to modify or supplement the measures at no additional cost to Fayetteville Public Works Commission. All erosion control measures shall remain serviceable until the site is restored and stabilized, upon such

time the measures shall be removed by the Contractor, and final payment may be approved.

The Contractor shall be required to prepare and obtain an approved erosion control plan addressing staging/storage area, haul roads, borrow pit operations and/or disposal/waste areas. The Contractor shall pay all fees associated with the supplemental plan and a copy of the NCDEQ approved plan shall be furnished to PWC. Work cannot begin until the plan is approved.

The Contractor shall be required to display at the job-site office (or readily available on the project site) both the PWC's Erosion Control Permit and the Contractor's Erosion Control Permit.

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

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

36. TRAFFIC CONTROL

Traffic control measures shall be in accordance with Specification Section 02500 – Traffic Control, and the following requirements.

The Contractor shall provide any and all traffic safety measures as required to satisfy local, state, and federal highway requirements. The Contractor working in public rights-of-way on streets open to vehicular traffic shall be required to temporarily maintain traffic control devices to reduce unnecessary congestion and unsafe traffic conditions.

The Contractor shall be liable for any damages resulting from his negligence in using adequate work zone traffic control. Furthermore, Fayetteville Public Works Commission reserves the right to stop any work for non-compliance.

The Contractor shall coordinate his activities so as to minimize disruption of traffic and inconvenience to residents and the general public. All such traffic control devices, traffic patterns and road closures shall be approved by the City of Fayetteville (the City).

The point of contact for the City of Fayetteville is:

Ramon Melendez (City): (910) 433-1090

Failure to provide and maintain adequate traffic control devices may result in Fayetteville Public Works Commission's refusal to make payment until corrective measures are in place.

Improper signage and traffic control devices will not be allowed. The City of Fayetteville, and/or Fayetteville Public Works Commission reserves the right to relocate and/or remove such non-conforming signs and devices, setup proper signage to ensure public safety and deduct all costs for these items which may be incurred by Fayetteville Public Works Commission. The Contractor shall make no claim for such work performed.

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.

37. PEDESTRIAN TRAFFIC CONTROL

Designated pedestrian travel-ways 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.

38. PROTECTION OF PROPERTY

Upon request from the property owner, the Contractor shall remove and set aside those plantings identified by the property owner. All plantings to be salvaged shall be placed at the edge of the existing easement. It will be the property owner's responsibility to re-plant those items saved.

Tree branches and ornamental shrubbery shall be temporarily tied back to avoid damage. Damage to trees shall be trimmed and treated with a tree dressing.

The drill entry area mud pit size depends on conditions. The trenched waterline will likely disturb the dripline of the Oak of the Shah property. If the dripline of the Oak is disturbed, the tree should be removed and replaced.

39. PROTECTION OF RETAINING WALL

PWC retained F&R to perform a preconstruction survey of the retaining wall to document the existing condition of the wall above the proposed HDD. F&R will also perform one periodic inspection of the wall during construction and a post-construction survey. F&R will prepare a separate letter report that includes a photo-diary of the wall, results of crack monitors and relevant observations. The Contractor shall support F&R during the work to provide access and protect any monitoring equipment.

40. REMOVAL AND REPLACEMENT OF FENCING

The Contractor is to replace any fencing disturbed as part of their operations for the work described within these Contract Documents. Fence re-setting is considered incidental to the operation, and no additional payment will be made for this work.

In addition, if temporary fencing is requested by a property owner, the Contractor shall provide such fencing as necessary, at no additional cost to Fayetteville Public Works Commission.

The Contractor is responsible to coordinate the fence removal and replacement for both the temporary and permanent placement with the property owner. Fences shall be removed, properly stored and replaced, using new items as required, to restore the item to the original condition or better. Fences shall be removed, properly stored and replaced, using new items as required, to restore the item to the original condition or better.

It is noted that private fences may be located across or on the utility easement. It is expected that the Contractor will fully scope the proposed project area(s) prior to commencing work, in order to conduct the work with minimal disruption and fence removal. The Contractor shall have the primary responsibility to coordinate access across private property.

41. HORIZONTAL DIRECTION DRILLING

The contractor shall retain a qualified geotechnical engineer to evaluate working platform bearing grades once final locations are selected and prior to starting the advancement of the HDD and submit evaluation to PWC prior to setting up the platform.

42. EXCAVATION

Excavation and backfill shall be in accordance with Technical Specification 02222 – Excavation and Backfilling for Utility Systems and the NCDOT Encroachment Permit, if applicable.

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.

Prior to excavation, the Contractor shall sawcut and remove asphalt or concrete pavement within the limits of allowable trench width. Where the excavation is within grassed easement areas, the Contractor shall take care to minimize disturbance and/or removal of trees, shrubs, bushes, etc. All excavations shall be carried to a neat line (except for the minimum space required for work, pipe jointing, caulking, etc.), and to exact finished grade except where otherwise specified (for instance, where rock is encountered in the bottom of the excavation).

Earthwork should ideally be performed during the summer months when the weather conditions are more conducive to moisture conditioning of fill materials.

Excavation material shall not be placed on pavement.

The excavation for all work included in this project is unclassified unless specifically stated in the Measurement and Payment section of these Contract Documents. The unit prices include all excavation and grading in whatever nature of material may be encountered. No additional payment will be made for excavation of material different from what was anticipated. The Contractor shall investigate and examine the site of the project before preparing and submitting a bid.

The Contractor will be held responsible for proper and adequate shoring and sheeting of all excavations. It shall also be the responsibility of the Contractor to protect all excavations from sloughing off and thus destroying firm soil for footings of any foundations planned or existing, adjacent to excavations carried to lower grade than the bottom of such foundations. Failure to observe this precaution will necessitate such foundations being carried to greater depth for firm footing at the expense of the Contractor for the extra work, time and materials involved; and the PWC Project Engineer shall have the right to determine the manner and extent to which security to the adjacent foundations shall be made.

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. The Contractor shall frequently evaluate excavation slopes each day by the "competent person" for compliance with applicable PWC and OSHA regulations.

If temporary excavations are required to limit, they should be sufficiently sloped and/or require temporary shoring such as trench boxes or internally braced excavations.

Where excavation to grade for structure or pipeline discloses a distinct difference in the character of foundations, such as rock and earth, the rock shall be excavated to a depth of six (6) inches below grade, and the additional space thus excavated shall be backfilled with suitable material, which shall be thoroughly tamped and compacted to grade of the adjoining foundation material, in order that the soil conditions may be uniform in supporting the foundation-bearing parts of the structure or pipe line.

All excavations shall be covered and protected when Work is not in progress. All excavations shall be protected from pedestrians.

As applicable excavations in streets may be covered with steel traffic plates and fastened to the pavement, as approved by the controlling agency and the PWC Project Engineer. When required by the controlling agency or the PWC Project Engineer, the plates shall be recessed into the pavement where the top of the pavement is flush with the top of the plates.

Excavations outside of vehicular areas may be covered with weather resistant $\frac{3}{4}$ -inch plywood, if approved by the PWC Project Engineer.

It may be necessary to surround the pits with concrete barriers if required by the controlling agency.

43. DEWATERING

The dewatering system shall be designed by contractor but may consist of sump pit and pumping techniques or a series of well points strategically placed around the construction area. The Contractor shall sequence the work to properly control groundwater levels during construction.

The Contractor shall maintain Groundwater levels to at least three feet or more below proposed subgrade elevations to protect surrounding areas. Groundwater levels shall be lowered prior to performing final excavations to subgrade elevation.

44. COMPACTION REQUIREMENTS

Compaction requirements in Specification Section 02222.

Tests for density of compaction are made at the sole direction of the PWC Project Engineer or the PWC Project Coordinator. All structural earth fill shall be compacted at a moisture content within +3 percentage points of the optimum moisture content. All deficiencies shall be corrected by the Contractor without additional cost to the Owner.

All structural fill material shall be placed and compacted under the fulltime control and supervision of a qualified geotechnical engineer or engineering technician working under the direction of the geotechnical engineer.

45. ASPHALT

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.

If the Contractor elects to saw-cut and remove the asphalt, the asphalt removed must be disposed of off-site at the Contractor's expense. The Contractor shall utilize aggregate base course (ABC) to backfill the trench to the level of the remaining asphalt.

It shall be the Contractor's responsibility to maintain the trench (swept, wetted, compacted, etc.) until the sewer and/or main is installed. No separate payment shall be made for

maintenance of the trench. The maximum allowable disturbed trench shall not exceed 3,000 feet. No trench shall be left un-patched for a period of time greater than sixty (60) calendar days after initial asphalt removal.

Immediately upon installation of the sewer and/or water main, the Contractor shall install ten (10) inches of ABC stone base in all open trenches (mains and laterals). It shall be the Contractor's responsibility to maintain the trench (swept, wetted, compacted, etc.) until the permanent pavement patch is in place. No separate payment shall be made for maintenance of the trench.

The Contractor shall install pavement patch in accordance with the applicable detail. The street crown shall be restored. The pavement patch shall match existing pavement within +/- one-quarter ($\frac{1}{4}$) inch. For NCDOT roadways, all pavement patching shall be in accordance with the approved encroachment.

Immediately prior to patch paving, the trench sides shall be saw-cut straight. The lateral trenches shall be patched at the same time as the main trench. The asphalt wedge curb shall be replaced in accordance with the Owner's requirements. Damaged curb outside of the trench limits shall be removed and replaced at the Contractor's expense.

The Contractor may excavate and grade the mainline and one (1) side of lateral trenches for paving one (1) calendar day ahead of scheduled paving. The lateral trenches on the opposite side of the road are to be excavated and graded just ahead of the paving operation. The Contractor shall provide a smooth transition eliminating any vertical drop from the existing pavement to the cut-out trench at all times. Transitions shall be installed at the lateral trenches, manholes, the beginning and end points of the main line trench and all affected driveways. Transitions shall remain in place until the day patch paving occurs. Upon completion of the daily patch paving operation, the Contractor shall re-install any removed transitions until such time the paving operation resumes. If the paving operation does not resume within two (2) calendar days, all excavated trenches shall be backfilled unless otherwise approved by the PWC Project Engineer. No separate payment for installation, maintenance, and removal of these transitions shall be made.

46. OWNERSHIP OF EXISTING UTILITIES

Existing utilities indicated on the Plans to be abandoned shall remain the property of the utility owner. The Contractor shall be responsible for removing the existing utilities as noted on the plans and removing the material from the site unless otherwise directed by the utility owner. The utility owner shall have the right of first refusal regarding the salvage of the material.

47. UTILITY COORDINATION

Coordination with the PWC Project Engineer, PWC Project Coordinator, and utility owner shall be a requirement of this Contract.

Coordination of temporary interruptions to gas, electric, cable and telephone services shall be the responsibility of the Contractor. The Contractor shall schedule a coordination meeting with the PWC Project Coordinator, PWC Project Engineer, and the utility owner a minimum of three (3) business days prior to any planned service interruption.

Coordination of temporary interruptions to water and/or sewer services shall be the responsibility of the Contractor. The Contractor shall schedule a coordination meeting with the PWC Project Coordinator, PWC Project Engineer, and utility owner a minimum of three (3) business days prior to any planned service interruption. The duration of the service

interruption shall be coordinated with the utility owner and the PWC Project Coordinator. Service interruptions to residents shall be limited to no more than eight (8) hours at any given time. If the service interruption is anticipated to exceed eight (8) hours, temporary service shall be provided. The Contractor shall provide all the necessary equipment and materials for temporary service. The notifications shall describe the work to be undertaken and approximate dates of the work. The text of the notifications shall be approved by the PWC in advance. The Contractor shall furnish a copy of the notification to the PWC Project Coordinator each time such notification is issued to the residents.

Whenever the property owner's use of the water and/or sanitary sewer must be interrupted by the Work, the Contractor shall notify the residents a minimum of 48 hours prior to service interruption. This notification shall be accomplished with door hanger notification cards placed at the addresses of the affected residents. Property owners shall be informed when service interruption takes place and the expected duration. The Contractor shall make every effort to minimize inconvenience to the public and property owners.

For service interruptions on PWC's water system, refer to the 'Water Outage' requirement of these Supplementary Conditions..

The utility owner shall supervise the Contractor's operation of their facilities within the work area.

48. PROTECTION OF AND DAMAGE TO EXISTING UTILITIES

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. If the Contractor damages the Contractor shall immediately notify the utility owner and the PWC Project Coordinator. If existing water, sewer, and/or other utilities (CATV, telephone, etc.) are damaged, the Contractor shall immediately notify the utility owner and the PWC Project Coordinator. The Contractor shall immediately commence repairs to the damaged water and/or sewer utility in accordance with the utility owner's requirements. The Contractor shall ensure that no debris from construction operations is allowed to enter the existing sewer system.

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.

Damage to Existing Sanitary Sewer Facilities

Damage to Fayetteville Public Works Commission facilities resulting from the Contractor's failure to control debris and/or other items related to their operation shall be the sole responsibility of the Contractor. In the event any debris or other item from their operation enters the sewer system, the Contractor shall immediately contact Fayetteville Public Works Commission. The Contractor shall then commence efforts to capture that debris at the downstream manholes. The Contractor shall continue to search for and recover any debris until either all debris is captured or instructed otherwise by Fayetteville Public Works Commission. Any costs incurred by Fayetteville Public Works Commission to help search for and/or retrieve the debris shall be the responsibility of the Contractor.

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.

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.

Damage to Culverts and Storm Drainage Structures

The Contractor shall remove and replace existing culverts and drainage structures as necessary during construction. Any damage to the City of Fayetteville's storm drainage infrastructure shall be repaired in accordance with City of Fayetteville requirements within seven (7) business days after damage occurs. All costs associated with the required repairs shall be the responsibility of the Contractor, at no cost to the Owner.

The utility owner shall supervise the Contractor's operation of all valves, gates, and other equipment. Except in case of emergency, the Contractor shall notify the utility owner a minimum of two (2) business days in advance of the need for operation of valves, gates, and other equipment necessary to allow the work to progress.

The Contractor shall notify the utility owner and the PWC Project Coordinator a minimum of 48 hours in advance to coordinate any proposed service interruption. 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.

49. FIRE HYDRANTS

Existing fire hydrants shall be accessible to the Fire Department at all times. Fire hydrants shall not be taken out of service without the utility owner's written approval. The Fire Department shall be notified of any fire hydrant taken out of service.

50. CONSTRUCTION AROUND UTILITY POLES AND GUY WIRES

The Contractor will be required to perform construction work around utility poles and guy wires which may be left in place within the construction limits of the project. The Contractor shall contact the owner of the utility to coordinate securing the poles during construction. It may be necessary for the Contractor to hire an electrical utility contractor to secure poles. All work outlined in this paragraph shall be at no additional cost to the Owner.

51. CROSSING OF ASBESTOS-CEMENT WATER MAINS

Where the proposed sewer main crosses an existing PWC water main, the Contractor shall pothole the existing water main to verify the pipe material. If the existing water main material is asbestos cement (AC), the Contractor shall replace a minimum of 20 feet of the water main with ductile iron. It is the PWC's sole determination as to the length of water main to be replaced. The replacement shall be scheduled so that it is completed prior to the sewer installation. All required notification to affected customers shall be done in accordance with these Contract Documents. Installation of the new ductile iron water main shall be in accordance with PWC requirements. The Contractor shall follow all applicable federal, state, local rules, and regulations regarding cutting and disposing of AC pipe.

NOTE: THIS REQUIREMENT DOES NOT APPLY TO THOSE WATER MAINS OWNED BY AQUA AMERICA.

52. CROSSING EXISTING OR PROPOSED UTILITIES

The Contractor shall conduct their operations so that the following requirements are adhered to: 1) Underground telephone, cable TV, and gas utilities or conduit banks shall be crossed maintaining a minimum of 12-inch separation or clearance. 2) 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: 1) Crossing over a conductor, maintain a minimum of 12-inches of undisturbed soil encasing the conductor. 2) Crossing under a conductor shall be accomplished by boring, maintaining 12-inches of undisturbed soil encasing the conductor.

No separate payment shall be made for this work.

53. REPLACEMENT OF PWC WATER SERVICES

The Contractor shall replace the existing water services that are damaged as a result of their operations in accordance with PWC standards. Damaged water services shall be replaced from the meter to the existing main utilizing copper tubing and all new fittings. The Contractor shall properly abandon the existing tap, and install a new tap, utilizing a new tapping saddle and corporation in accordance with PWC standards.

The Contractor shall be responsible for connecting the new tailpiece to the customer's existing service utilizing brass fittings. The Contractor is responsible for all necessary fittings in order to connect the copper tubing to the existing meter.

The existing meter boxes shall be replaced as part of the renewal of the water services. A composite, H-20 rated meter box shall be used if the meter is to be located in asphalt or concrete. The Contractor shall be responsible for furnishing and installing the meter boxes. All work shall be approved by the PWC Project Coordinator.

Should the PWC Project Engineer determine that an existing water service be replaced, the Contractor shall replace that service in accordance with the above paragraphs.

54. PLANNED WATER OUTAGES

The Contractor shall schedule a coordination meeting with the PWC Project Coordinator and the PWC Project Engineer a minimum of three (3) working days prior to any proposed water outage. The coordination meeting shall be conducted prior to any notices being issued. The Contractor shall locate (vertically and horizontally) any utilities within the work area, in accordance with these Contract Documents. The locations of all utilities within the work area shall be determined prior to the coordination meeting. Any conflicts with the proposed work and the existing utilities shall be identified, and a plan for resolving the conflicts shall be presented to PWC. The purpose of this coordination meeting is to ensure that the Contractor has a good understanding of the requirements related to the proposed outage, verify that there are no utility conflicts, discuss any necessary contingency plans, and all equipment, materials, tools, and all other incidentals necessary to complete the work are on the project site in good working order. Should, for any reason, PWC deem that the Contractor is not prepared for the proposed outage, the outage notifications will not be distributed, and the

outage shall be postponed a minimum of two (2) weeks. PWC will provide written notification to the Contractor of this decision. No additional contract time will be granted for this delay. Should the Contract time expire within that two (2) week period, PWC reserves the right to assess liquidated damages, as outlined in these Contract Documents.

Once the water outage notifications have been issued, a follow-up coordination meeting with the PWC Project Coordinator and PWC shall be held a minimum of 24 hours prior to the scheduled outage. The purpose of this meeting is to verify that the Contractor is prepared to proceed with the outage, and that all equipment, materials, tools, and all other incidentals necessary to complete the Work are on the project site and in good working order. If for any reason PWC deems that the Contractor is not prepared, the outage shall be postponed, and all customers immediately notified of the cancellation. The outage shall be postponed a minimum of two (2) weeks. No additional Contract time will be granted for this delay. Should the Contract time expire within that two (2) week period, PWC reserves the right to assess liquidated damages, as outlined in these Contract Documents.

The Contractor shall complete the required work and restore water service within the given time period for the outage. Should the Contractor fail to complete the work within the allotted time, PWC shall assess a penalty of \$500 per 15-minute interval or any portion thereof until water service is restored. This penalty will be deducted from the Contractor's pay application or be billed directly to the Contractor. The penalty may be waived for circumstances beyond the Contractor's control, as deemed by PWC. The PWC Project Coordinator and/or PWC Project Engineer reserve the right to cancel or postpone the outage at any time, for any reason.

NOTE: THIS REQUIREMENT DOES NOT APPLY TO THOSE WATER MAINS OWNED BY AQUA AMERICA.

55. TESTING-GENERAL

All testing shall be in accordance with PWC standards and upon completion. 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 PWC.

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.

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.

56. PRE-TESTING

The Contractor shall perform all water system and/or sewer system pre-testing satisfactorily prior to scheduling the test to be observed by the PWC Project Coordinator.

Pre-testing shall include mandrel pulling; pressure tests for water mains and laterals; vacuum testing manholes; air/pressure tests for sewer mains and laterals; and pressure testing force mains.

57. TESTING-WATER

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

All water mains and water laterals shall be flushed, disinfected, and hydrostatically tested prior to placing into service. Disinfection and testing shall be in accordance with PWC Specification 02660 – Water Distribution. The PWC Project Coordinator shall be present when the Contractor begins chlorination.

The Contractor will be required to flush and remove the chlorine from the main 24 hours after initial chlorination. The North Carolina Department of Environmental Quality limits the amount of chlorinated water that may be allowed to enter a live stream, creek, or other body of water (lake, pond, etc.). The acceptable level of residual chlorine is less than 0.2 parts per million. The Contractor is responsible for reducing the residual chlorine to the acceptable level.

58. SITE RESTORATION AND CLEANUP

Upon completion of a section of work, the project location shall be cleaned up and grounds restored to the conditions that existed prior to commencing work. All restoration work shall be completed prior to commencing another section of work. Restoration includes, but is not limited to, seeding, mulching, placement of sod, replacement of fences, and patch paving. Failure to complete the restoration work in a timely manner may result in PWC withholding payment.

For those areas outside the project limits, the Contractor shall be responsible for installing sod in all disturbed areas, unless otherwise noted on the plans, and for the full replacement of any driveways disturbed as part of their operations. In those areas where an established stand of grass is disturbed due to the construction activities, the Contractor shall restore that area with sod. All other non-paved areas shall be seeded and mulched. Should the Contractor have questions regarding the required restoration, the Contractor shall coordinate with the PWC Project Coordinator.

All property which is surplus to the needs of the project will remain or become property of the Contractor unless otherwise stated in these Contract Documents. Surplus material, tools, and temporary structures shall be removed by the Contractor within 7 calendar days. 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.

The Contractor is to replace any fencing disturbed as part of their operations. Replacement of fencing is considered incidental to the operation, and no additional payment will be made for this work. In addition, if temporary fencing is required, the Contractor shall provide such fencing as necessary, at no additional cost to PWC. Fences shall be removed and replaced, using new materials as required, to restore the item to the original condition or better.

INCIDENTAL PROCEDURES

59. EMERGENCY RESPONSE

In the event an emergency occurs, the Contractor shall immediately notify the PWC Project Coordinator and the PWC Project Engineer, and immediately commence repairs. If the Contractor is unable to contact the PWC Project Coordinator and PWC Project Engineer, the Contractor shall immediately contact the PWC Dispatcher (910-678-7400).

Once onsite the Contractor shall notify the PWC's Commission Dispatcher of the problem, the anticipated response time and the estimated time required to complete the repair work (AQUA

Emergency 877.WTR.AQUA or 877.987.2782). It is expected that the Contractor will have the appropriate repair materials on-site in order to provide an immediate response to any water, sewer, street, and/or storm emergency. Should it be determined that the cause of the water, sewer, street, and/or storm emergency. No reimbursement to the Contractor shall be made for repairs resulting from the Contractor's actions and/or negligence.

The Contractor shall have personnel available to respond and perform emergency work immediately in less than two (2) hours. It is the Contractor's responsibility to immediately respond to any emergency. The Contractor shall immediately notify Fayetteville Public Works Commission if their crews are unable to perform the emergency work or if assistance will be required from Fayetteville Public Works Commission. Any work completed by Fayetteville Public Works Commission may be billed to the Contractor.

The Contractor shall maintain a crew capable of performing emergency maintenance work 24 hours a day, seven (7) days a week, including all holidays. 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 individual's names shall be furnished to Fayetteville Public Works Commission.

60. 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 PWC Water Resources Construction Department, (910) 223-4716. After normal business hours, the Contractor shall contact the PWC Dispatch Center, (910) 678-7400.

In the event that raw sewage 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 Fayetteville Public Works Commission. The Contractor is also responsible for complying with any and all regulatory requirements in regard to the size spill with no additional cost to Fayetteville Public Works Commission. The Contractor shall cooperate fully with Fayetteville Public Works Commission and the applicable State agencies in responding to and cleaning up the spill. Any work completed by 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 the Contractor's failure to reopen a lateral properly or expeditiously or other aspect of the Contractor's operation, the Contractor shall immediately notify Fayetteville Public Works Commission, inspect the property with 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.

61. CONFINED SPACE

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

62. CHEMICAL USEAGE

All constituents of concern/chemicals used during project construction or furnished for project operation, whether herbicides, pesticides, disinfectant, polymer, reactant or of other classification, must show approval of either the Environmental Protection Agency or the USDA. Use of all such chemical and disposal of residues shall be in strict conformance with manufacturer's instructions. Use, storage, and final disposal of all such chemical and disposal of residues shall be in strict conformance with manufacturer's instructions. The chemical storage area must be included in the Staging Area plan.

63. HAZARDOUS COMMUNICATION PROGRAMS

Refer to Article 5, Paragraph 5.05 – PWC General Conditions.

The Contractor shall be responsible to provide to PWC and maintain safety data sheets (SDS) sheets at the job site at all times. The sheets shall be located in an easily accessible and prominently located area. If the Contractor encounters any materials considered or suspected of being hazardous, the Contractor shall immediately secure the area and contact the PWC Project Engineer for further instructions.

64. MANAGEMENT

The Contractor shall properly dispose of all unsuitable and excess materials at no additional cost to PWC.

The Contractor shall prepare and submit a Waste Management Plan shall include a description of the approach to managing waste, precharacterization, identified of proposed disposal facilities, disposal facility permits and insurance, transportation permits and insurance. No waste shall be removed from the project or disposed without approval of PWC. All disposal documentation shall be tracked from cradle to grave and final executed manifests/bills of lading provided to PWC.

65. DISPOSAL OF DEBRIS

Debris collected by the Contractor's cleaning efforts can be disposed of at Fayetteville Public Works Commission's Rockfish Creek Water Reclamation Facility (WRF). Fayetteville Public Works Commission will be responsible for the debris once it is received at the Rockfish Creek WRF. The Rockfish Creek WRF is located at the end of Tracy Hall Road, near the intersection of Old Wilmington Road and NC Highway 87. The Contractor shall bear all costs for transporting the debris to the disposal site.

The Contractor shall take all necessary precautions to prevent debris and other items related to their rehabilitation efforts from entering the sewer system.

66. WEIGH/QUANTITY TICKETS

Weigh/quantity tickets shall be required for those Contract quantities that are not measured in place. Work of this nature requires the PWC Project Coordinator's approval prior to beginning or the Owner reserves the right not to pay for unauthorized work.

All weigh/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 a "certified scale ticket" with each load of material to the PWC Project Coordinator by 5:00 pm the following business day in order to be considered for payment. Tickets shall not be accepted after that time.

When a material is to be paid for on a per ton basis, 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 Statutes. A certified weigh certificate shall be issued for each load and contain the following information:

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

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 Owner.

When material is to be paid for on per cubic yard basis, the payment shall be based on 75% of the volume listed on the weigh/quantity ticket.

FINAL INSPECTION AND CLOSE OUT

67. FINAL INSPECTION/ACCEPTANCE OF WORK

When the PWC Project Coordinator deems the project completed and ready for final inspection, the PWC Project Coordinator shall notify the PWC Project Engineer. During the final inspection, any items documented shall be compiled in a final punch list and provided to the Contractor within five (5) business days. The Contractor shall be required to complete each item in the final inspection punch list within 30 calendar days of receipt. 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.

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

- Verify all valves are open.

- Verify all valves are accessible and can be opened.
- Place paint marks at the curb to indicate the location of water and sewer laterals (blue and green marks respectively). The paint shall be heavily applied, so that the paint will last.
- Place a PWC issued marker at all valves, outside of pavement as directed by the PWC Project Coordinator.
- Complete all restoration.
- Complete all required testing.

No separate payment shall be made for this work.

68. RECORD DRAWINGS

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:

- Change in pipe material.
- Size, depth, and installed elevations of mains.
- Location of valves, laterals, blow-offs, and other appurtenances

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.

69. FINAL COMPLETION DOCUMENTATION

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

- Complete all punch list items to the satisfaction of the PWC Project Engineer.
- Satisfactorily resolve all customer complaints and obtain the required releases.
- All post-construction inspection videos
- Project record drawings, in accordance with Submittals Section 01300; and
- Project close-out submittals in accordance with Submittals Section 01300.

01001 – AVAILABLE INFORMATION

1 GENERAL

Section 00 30 00 includes available information that is relevant to the Work. The documents attached in this Section are not Contract Documents unless explicitly stated. The following outline the contents of the attached available information.

2 PERMITS

PWC has issued a water construction permit for this Project. The permit is included in Appendix A. The permit placard shall be posted at the job site. The permitted drawings shall remain on site at all times during the Work.

3 EASEMENTS

Easements for the water line installation are included in Appendix B

4 TECHNICAL REPORTS

PWC retained Froehling & Robertson (F&R) to perform geotechnical engineering services for the project. The purpose of the subsurface exploration and geotechnical engineering evaluation was to explore the subsurface conditions in the area of the proposed waterline and to provide geotechnical engineering recommendations that can be used during the design and construction phases of the project. The August 2021 F&R Report of Subsurface Exploration and Geotechnical Engineering Evaluation is included in Appendix C and summarized below:

Investigation Borings and Findings (Sections 3.0 and 4.0)

- F&R installed two (2) soil test borings (B-1 and B-2) to depths of 25 and 28.8 feet below grade (fbg), respectively near the proposed directional bore entry and exit locations. In addition, one (1) hand auger boring (B-3) to a depth of 5.5 fbg was installed below the existing ground surface was performed near the retaining wall.
- Groundwater was encountered in all of the borings at depths ranging from 5.1 to 11.9 fbg.
- A Subsurface Profile has been prepared from the boring data to graphically illustrate the subsurface conditions encountered at the site. The Subsurface Profile is presented as Figure 3 in Appendix I. More-detailed descriptions of the subsurface conditions at the individual boring locations are presented on the Boring Logs provided in Appendix II.

Horizontal Directional Drilling (Section 5.2)

- The invert elevation of the HDD is at about EL 191 feet and EL 198 feet at the beginning and end of the crossing, respectively. At those two locations, it is anticipated that the HDD will mostly encounter moist to saturated, medium dense, sands (SM and SC) and saturated, stiff, low plasticity silty clay (CL).

- At its lowest point in the middle, the invert elevation is at about EL 179 feet. In this area, it is anticipated that the HDD will encounter very dense silty sands with N-values greater than 100 bpf. **Difficult drilling conditions could be encountered during HDD installation.**

HDD Working Platform (Section 5.3)

- It is anticipated that the bearing grade at the entry and receiving points will consist of moist, loose to medium dense, silty, and clayed sands (SM and SC). Subgrade repair will not likely be required.

Existing Retaining Wall (Section 5.4)

- The soil material at the back of the wall consisted of generally very loose, moist to wet, silty and clayey sands (SM and SC) underlain by very soft, wet, sandy clay (CL).
- F&R hand excavated in front of the wall at two separate locations to investigate the depth and thickness of the existing footing, but no footing was encountered.
- The embedment depth of the wall below the ground surface at the front of the wall was measured to be 0.5 to 1.5 fbg.
- The bearing material beneath the wall was observed to be alluvial soils classified as dark gray, wet, sandy clays.

Temporary Excavation Recommendations (Section 5.5)

- Temporary excavations will not likely be required for this project based.

Dewatering (Section 5.6)

- The Contractor shall maintain Groundwater levels to at least three feet or more below proposed subgrade elevations to protect surround areas.
- Groundwater levels shall be lowered prior to performing final excavations to subgrade elevation.

Structural Fill Placement And Compaction (Section 5.7)

- Highly plastic soils (MH, CL/CH & CH) shall not be re-used as structural fill/backfill.
- Earthwork should ideally be performed during the summer/dry season months when the weather conditions are more conducive to moisture conditioning of fill materials.

DIVISION 1
01025 – MEASUREMENT AND PAYMENT

The purpose of this Section is to define the methods of measurement and payment for each of the unit prices and/or lump sum prices listed in the Bid Form, which are required to construct the Work.

The unit price and/or lump sum price bid shall be full compensation for the work required under each bid item, which shall include all incidental costs relative thereto. Certain items of work are specified and/or shown as a detail in the Contract Documents; bid prices shall include all items of work required to furnish and/or install each in accordance with the Project requirements, whether specifically stated or itemized in the Measure and Payment description. No payment will be made for stored materials.

Article 1 – INCIDENTAL ITEMS

1.01 Mobilization

- A. Payment for mobilization shall be made at a lump sum price up to 3% of Total Bid Price for each schedule.
- B. A mobilization pay item shall include all initial costs incurred prior to beginning work on this Contract, including but not limited to permits, licenses, fees, insurance, bonds, etc., as well as mobilization and demobilization of personnel and equipment up to 3% of the Total Bid Price.
- C. Payment shall be made in two (2) equal installments. The actual costs of bonds and insurance 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).

1.02 Traffic Plan and Traffic Control

- A. Payment for preparation and implementation of the Traffic Control Plan shall be made at the lump sum price as listed in the Bid Form.
- B. Work shall include all labor, supervision, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to complete the work, including but not limited to preparation and implementation of a Traffic Control and Pedestrian Protection Management Plan, installation, adjustments, maintenance, signage, signals, and accessories to perform all operations required to control traffic (vehicular and pedestrian) related to all the work throughout the project site, throughout the project duration. The Contractor shall coordinate his activities so as to minimize disruption of traffic and inconvenience to residents and the general public.

- C. All such traffic control and protection of pedestrian devices shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and approved by the City of Fayetteville.
- D. Payment under the lump sum price bid shall be made on a monthly basis based on actual estimated percentage of work completed and maintained as determined by the Project Coordinator or Project Engineer. No additional payment shall be made for any other Work due to inadequate or improperly maintained measures.
- E. The Fayetteville Public Works Commission, and the COF reserve the right relocate and/or remove such non-conforming signs and devices, setup proper signage to ensure public safety and deduct all costs for these items which may be incurred by the Fayetteville Public Works Commission. The Contractor shall make no claim for such work performed.

1.03 Erosion & Sedimentation Control

- A. Payment for the installation and maintenance of erosion and sedimentation controls shall be made at the lump sum price as listed in the Bid Form.
- B. A Sediment and Erosion Control Pay item shall include all labor, supervision, materials, equipment, tools, and other incidentals, not specifically covered in other bid items to install and maintain sediment and erosion control for compliance with the state and local requirements, the Erosion and Sedimentation Control Plan, and all work indicated on the Contract Drawings. These items shall include but not limited to furnishing, installing, and maintenance of silt fence, temporary sedimentation control devices, rip-rap, rock check dams, temporary seeding, gravel construction entrances, filter fabric, integral straw, culled wood matting, inlet protection, removal, cleanup, disposal and any other erosion control devices as may be required by the appropriate regulatory agencies throughout the project site, throughout the project duration.
- C. Prospective bidders are advised that erosion and sedimentation control will be strictly enforced, and any failure to conform to required standards is considered a right precedent to the Fayetteville Public Works Commission to deny payment. The Contractor shall be responsible for all fines levied due to improper erosion and sediment control measures to include all costs incurred by City of Fayetteville and/or Fayetteville Public Works Commission necessary to bring a non-conforming site into compliance.
- D. No additional payment will be made for removal of soil and debris from drainage structures, features, or reconditioning grading that is part of the normal maintenance activities associated with the approved erosion control plan. No additional payment shall be made for any other work due to inadequate or improperly maintained measures.
- E. 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). The

remaining balance will be paid once the restoration of the area is completed. The Contractor shall provide documentation (invoices, etc.) with their payment application to support the amount requested.

1.04 Clearing & Grubbing

- A. Measurement shall be based upon the acre of clearing and grubbing. Measurement shall be the nearest one-tenth of an acre of clearing and grubbing completed. Payment shall be made at the applicable unit price per acre as listed in the Bid Form. No payment will be made for clearing and grubbing beyond the areas designated on the plans.
- B. The unit price shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to complete the work, including but not limited to felling trees, stump removal and disposal off-site, cutting trees in pulpwood length and stacking on or off easement areas if required, disposing of all trimmings, removing and disposing off-site all logs, branches, trunks, root mats, brush, vegetation, debris from clearing and grubbing operations and all other incidental materials not to be re-used in the work.
- C. Areas containing and requiring cutting and removal of weeds, grass, grain annual or perennial plants, or saplings less than one inch in diameter shall not be measured and paid for as Clearing and Grubbing.
- D. No payment will be made for clearing and grubbing beyond the areas designated on the plans.

1.05 Select Material (Backfill)

- A. This item shall be measured by cubic yards of select material as defined in PWC Technical Specification 02222 – *Excavation and Backfilling*. The actual quantity considered for payment shall be 75% of the volume indicated on the submitted truck tickets. The Fayetteville Public Works Commission reserves the right to verify the actual amount of material in place. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. The unit price shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to complete the work, including but not limited to furnishing and installing select material to provide proper suitable backfill material compacted and in place as measured, removal and proper disposal of unusable material. The PWC Project Coordinator shall approve the use of select material within the limits of this project.
- C. Borrow excavation material shall be supplied by the Contractor from approved borrow areas located off-site. Materials utilized on-site within the Project limits or free haul

limit (defined as a two-mile radius from the project site) will not be considered for payment as borrow excavation.

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

1.06 Remove & Replace Curb & Gutter - Concrete

- A. Measurement shall be based upon the linear footage of actual curb and gutter removed and replaced. Measurement shall be along the bottom of the gutter near the face of the curb, excluding catch basin openings. Payment shall be made at the applicable Contract unit price.
- B. The unit price under this item shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to complete the work, including but not limited to removing and disposing of existing curb and gutter, furnishing, hauling, and placing all materials, fine grading the subgrade, backfilling behind the curb with topsoil, adding soil amendments, expansion joints, forms, and curing.

1.07 Permanent Asphalt Patch

- A. This item shall be measured by square yards of asphalt pavement, complete and accepted. Measurement of this item shall be made to the nearest one-tenth square yard total. Payment shall be made at the applicable unit price per square yard as listed in the Bid Form.
- B. The unit price under this item shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to complete the work, including but not limited to re-cutting pavement to straight uniform widths parallel and perpendicular to the road with no jagged edges, removal and disposal of re-cut asphalt off site, re-compaction, removing and disposing of excess soil base course, re-compaction of pavement sub-grade, placement and compaction of temporary ABC stone to pavement grade, maintaining stone at pavement grade until removal of temporary stone for paving, transitions as required, adjusting castings as required, tack coat, placing and compacting of asphalt material, reinstating pavement markings, and cleanup.
- C. If a patched area exhibits signs of settling within the warranty period, the Contractor shall remove asphalt, re-compact base and sub-base, dispose of unsuitable material off-site and re-patch any areas of settlement at no expense to the Fayetteville Public Works Commission.
- D. Payment for this item will not be made until applicable test reports have been submitted to the PWC Project Engineer and approved for acceptance.

1.08 Permanent Seeding

- A. Measurement shall be by acres of exposed ground that is covered by an appropriate seed mixture. Measurement shall be nearest one tenth (1/10) of an acre. This item shall apply to seeding within easements and along rights-of-way. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. The unit price under this item shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to complete the work, including but not limited to soil preparation, pest control, disease control, anchoring, placing soil amendments, topsoil, grading, raking, seeding, fertilizing, mulching, crimping, watering, protection of turf areas, maintenance, and re-seeding if required.
- C. Seeding shall be placed in accordance with Technical Specification 02930 – *Seeding*.
- D. No payment will be made for areas outside of permanent and temporary easements and along rights-of-way.

1.09 Permanent Sod

- A. This item shall be measured by square yards of sod complete and, place and accepted. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. The unit price shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items necessary to complete the work, including but not limited to soil preparation, anchoring, furnishing sod, placing sod, providing topsoil as necessary, grading, raking, pest and disease control, soil amendments, fertilizing, maintaining, removal and replacement of dying sod, watering, and reseeding if required.
- C. Stripping of topsoil for sodding will not be measured and paid as a separate bid item and shall be considered incidental to this item. Work shall include stripping, stockpiling, spreading, leveling, supplemental topsoil, filling, grading and compaction of suitable topsoil.
- D. No payment will be made for placing sod beyond the areas designated on the plans or by the Fayetteville Public Works Commission Project Engineer. No payment will be made for re-sodding.

Article 2 – WATER CONSTRUCTION ITEMS

2.01 Furnish and Install Water Main by Horizontal Directional Drill – 8” Fusible C900 PVC

- A. Payment for the installation of the new water main installed by horizontal directional drill shall be made at the lump sum price as listed in the Bid Form.
- B. Payment under this item shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to furnish and install new 8-inch Fusible C900 Polyvinyl chloride (PVC) water main as shown on the Contract Drawings and in accordance with these Contract Documents and PWC standards. The work shall include, but not limited to, obtaining access to launching and target pits, excavation, shoring, removal and disposal of excess unsuitable material off site, backfilling, off-site borrow material, compaction, compaction testing, tracing wire, pipe material, transition fittings, transition to open cut installation, furnishing and installing marker posts.
- C. Installation of the water main shall be accomplished in accordance with PWC Technical Specification 02660 - *Water Distribution* and Technical Specification 02447 – *Horizontal Directional Drilling*.
- D. No payment for installation of the water main shall be made until all required tests are satisfactorily completed.

2.02 Furnish and Install Water Main by Horizontal Directional Drill – 10” DR9 HDPE

- A. Payment for the installation of the new water main installed by horizontal directional drill shall be made at the lump sum price as listed in the Bid Form.
- B. Payment under this item shall include all labor, materials, equipment, tools, and other incidentals, not specifically covered in other bid items, necessary to furnish and install new 10-inch DR9 High Density Poly Ethylene (HDPE) water main as shown on the Contract Drawings and in accordance with these Contract Documents and PWC standards. The work shall include, but not limited to, obtaining access to launching and target pits, excavation, shoring, removal and disposal of excess unsuitable material off site, backfilling, off-site borrow material, compaction, compaction testing, tracing wire, pipe material, transition fittings, concrete thrust collars, transition to open cut installation, furnishing and installing marker posts.
- C. Installation of the water main shall be accomplished in accordance with PWC Technical Specification 02660 - *Water Distribution* and Technical Specification 02447 – *Horizontal Directional Drilling*.
- D. No payment for installation of the water main shall be made until all required tests are satisfactorily completed.

2.03 Furnish and Install Water Main by Open Trench

- A. Measurement shall be by the actual linear feet of water main installed by open trench, including all necessary fittings. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. The unit price shall include all labor, materials, equipment, tools, and incidentals not specifically covered in other bid items, necessary to install the water main and fittings as specified on the construction drawings and in accordance with PWC standards. The work shall include, but not limited to cutting and removal of pavement as required, excavation, shoring, dewatering, removal and disposal of excess unsuitable material off site, bedding material, installation of the pipe at the specified line and grade, tracing wire, thrust blocking as required, backfill and compaction. All pipe segments installed must have passed the detailed compaction requirements in order to be considered for payment.
- C. 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.
- D. No payment for will be made under this item until all required testing has been satisfactorily completed.

2.04 Furnish and Install Water Main by Direct Bore

- A. This item shall be measured by actual linear feet of water main installed crossing underground electrical cable as shown on drawings by direct bore, free bore, or hand dig as appropriate, including all necessary fittings. Payment shall be made at the applicable unit price as listed in the Bid Form.
- B. The unit price shall include all labor, materials, equipment, tools, and incidentals not specifically covered in other bid items, necessary to install the water main and fittings as specified on the construction drawings and in accordance with PWC standards. The work shall include, but not limited to, obtaining access to launching and target pits, excavation, shoring, removal and disposal of excess unsuitable material off site, backfilling, off-site borrow material, compaction, compaction testing, tracing wire, pipe material, transition fittings, and transition to open cut installation.
- C. 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.
- D. Installation of the ductile iron water main shall be accomplished in accordance with PWC Technical Specification 02660 - Water Distribution.
- E. No payment for will be made under this item until all required testing has been satisfactorily completed.

2.05 Furnish and Install New Tapping Sleeve & Valve

- A. This item shall be measured by actual count, complete and in place. Payment will be made at the applicable unit price as listed in the Bid Form.
- B. The unit price shall include all labor, materials, equipment, tools, and incidentals not specifically covered in other bid items, necessary to to install the tapping sleeves and valves as specified on the construction drawings and in accordance with PWC standards. The work shall include, but not limited to, excavation, shoring, removal, and disposal of excess unsuitable material off site, thrust blocking as required, valve boxes, concrete protection rings, concrete collars, tracing wire, backfill, and compaction.

2.06 Furnish and Install New Gate Valve

- A. This item shall be measured by actual count of new gate valves installed complete and in place. Payment will be made at the applicable unit price as listed in the Bid Form.
- B. The unit price shall include all labor, materials, equipment, tools, and incidentals not specifically covered in other bid items, necessary to install the specified gate valve and valve box as indicated on the plans and in accordance with PWC Standards. The work shall include, but not limited to, cutting and removal of pavement as required, excavation, shoring, removal, and disposal of excess unsuitable material off site, removal of old valve where identified on drawings, valve boxes, concrete protection rings, tracing wire, backfill, and compaction.

2.07 Sterilization and Testing

- A. This item shall be measured by actual linear feet of new main tested, sterilized, and accepted. Payment under this item will be made at the applicable unit price as listed in the Bid Form.
- B. The unit price shall include all labor, materials, equipment, tools, and incidentals not specifically covered in other bid items, necessary to complete the work including but not limited to furnishing test equipment, installation of temporary taps for testing and/or disinfection, coordination with the PWC Project Coordinator, required sterilization and testing on the water mains, laterals, and appurtenances, removal of all unnecessary taps and fittings upon completion of the work, and disposal of hazardous chemicals from the site.
- C. The Contractor shall pressure test and disinfect the new water main, laterals, and appurtenances in accordance with PWC standards and all applicable standards, laws, and regulations, prior to placing them into service. The PWC Project Coordinator shall be present for all testing. When the main is tested for sterilization, the PWC Project Coordinator shall take a sample to the PWC lab to verify disinfection.

Article 3 – ALLOWANCES

3.01 Contingency

- A. Measurement: Lump sum basis.
- B. This line item shall be used only upon issuance of a Change Order, a Work Change Directive, or a Field Order by the Fayetteville Public Works Commission for work not included in other items. The amount paid will be negotiated as per procedures in the General Conditions, Article IV-Amending the Contract Documents; Changes in the Work.
- C. Any unused portion of the allowance remaining at the completion of the Contract shall revert to the Fayetteville Public Works Commission as a credit.
- D. The Fayetteville Public Works Commission reserves the right to delete the allowance from the Contract prior to award.

**DIVISION 1
01300 – SUBMITTALS**

PART 1 -- GENERAL

1.01 THE REQUIREMENT

- A. This section specifies the means of all submittals. All submittals shall be submitted to the Fayetteville Public Works Commission. A general summary of the types of submittals and the number of copies required is as follows:

<u>Copies to Owner</u>	<u>Type of Submittal</u>
1	Shop drawings
1	Product samples
1	Certificates of compliance
1	Warranties

- B. All submittals shall be provided in accordance with this Section, and as outlined in Section 01000 – Supplementary Conditions. The Contractor shall refer to other Specification Sections within these Contract Documents, to ensure that all submittal requirements are adhered to. No construction shall proceed until all required submittals have been reviewed and approved by the Fayetteville Public Works Commission. Any and all work performed prior to review and acceptance of the submittals by the Fayetteville Public Works Commission shall be at the Contractor's sole risk. Further, failure to comply with the requirements of this Section may be considered Breach of Contract, and grounds for termination.

1.02 SUBMITTAL PROCEDURES

- A. The Contractor shall transmit each submittal with a form acceptable to the Fayetteville Public Works Commission, clearly identifying the project and the Contractor, the enclosed material and other pertinent information specified in other parts of this section. The submittal shall identify variations from the Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- B. The Contractor shall revise and resubmit submittals as required, identifying all changes made since previous submittals. Resubmittals shall be noted as such.
- C. The Contractor shall distribute copies of reviewed submittals to concerned parties, with instructions to those parties to promptly report any inability to comply with provisions.

1.03 SHOP DRAWINGS

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

- A. General: The Contractor shall submit for review shop drawings for concrete reinforcement, structural details, materials fabricated especially for this Contract, and materials for which such Drawings are specified (as outlined in these Contract Documents) or as specifically requested by the Fayetteville Public Works Commission.
- B. Shop drawings shall show the principal dimensions, weight, structural and operating features, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the Drawings.
- C. When so specified, or if considered by the Fayetteville Public Works Commission to be acceptable, the manufacturer's specifications, catalog data, descriptive matter, illustrations, etc. may be submitted for review in place of shop drawings. In such case, the requirements shall be as specified for shop drawings, insofar as applicable.
- D. The Contractor shall be responsible for the prompt submittal of all shop drawings so that there shall be no delay to the Work due to the absence of such Drawings. The Fayetteville Public Works Commission will review the shop drawings within 10 business days of receipt of such Drawings. Reviewed shop drawings will be returned to the Contractor by regular mail.
- E. Time delays caused by rejection of submittals are not cause for extra charges to the Fayetteville Public Works Commission or time extensions.
- F. Requirements: All shop drawings shall be submitted to the Fayetteville Public Works Commission through the Contractor. The Contractor is responsible for obtaining shop drawings from his subcontractors and returning reviewed Drawings to them. All shop drawings shall be prepared on standard size, 24-inch by 36-inch sheets, or smaller, as approved by the Fayetteville Public Works Commission. All Drawings shall be clearly marked with the name of the project, Fayetteville Public Works Commission, Contractor, and pay item to which the drawing applies. Drawings shall be suitably numbered and stamped by the Contractor. Each shipment of Drawings shall be accompanied by a letter of transmittal giving a list of the drawing numbers and the names mentioned above.
- G. Product Data: Where manufacturer's publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the particular item offered. Identification of such items and relative pertinent information shall be made with indelible ink. Submissions showing only general information will not be accepted.
- H. Product data shall include materials of construction, dimensions, performance characteristics and capacities, etc.
- I. Sample Warranties: 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.
- J. Work Prior to Review: No material or equipment shall be purchased, fabricated especially for this Contract, or delivered to the project site until the required shop drawings have been

submitted, processed and marked either "APPROVED" or "APPROVED AS NOTED". All materials and Work involved in the construction shall be as represented by said Drawings.

- K. The Contractor shall not proceed with any portion of the Work for which the design and details are dependent upon the design and details of equipment for which submittal review has not been completed.
- L. Contractor's Review: Only submittals which have been checked and corrected should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting shop drawings to the Fayetteville Public Works Commission, the Contractor shall check thoroughly all such Drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. Drawings which are correct shall be marked with the date, checker's name and indications of the Contractor's approval, and then shall be submitted to the Fayetteville Public Works Commission; other Drawings submitted to the Fayetteville Public Works Commission will be returned to the Contractor unreviewed.
- M. Contractor's Responsibility: The review of shop drawings will be general and shall not relieve the Contractor of the responsibility for details of design, dimensions, etc., necessary for proper fitting and construction of the Work required by the Contract and for achieving the specified performance.
- N. Contractor's Modifications: For submissions containing departures from the Contract Documents, the Contractor shall include proper explanation in his letter of transmittal. Should the Contractor submit for review equipment that requires modifications to the structures, piping, layout, etc. detailed on the Drawings, he shall also submit for review details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Fayetteville Public Works Commission, shall do all Work necessary to make such modifications.
- O. Substitutions: Whenever a particular brand or make of material, equipment, or other item is specified, or is indicated in these Contract Documents, it is for the purpose of establishing a standard of quality, design, and type desired and to supplement the detailed specifications. Any other brand or make which, in the opinion of the Fayetteville Public Works Commission, is equivalent to that specified or indicated may be offered as a substitute subject to the following provisions:
 - a. Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature, and performance data together with samples of the materials, where feasible, to enable the Fayetteville Public Works Commission to determine if the proposed substitution is equal.
 - b. Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.
 - c. A list of installations (including contact information) where the proposed substitution is equal.
 - d. Where the acceptance of a substitution requires revision or redesign of any part of the Work, all such revision and redesign, and all new Drawings and details required therefore, shall be provided by the Contractor at his own cost and expense, and shall be subject to review of the Fayetteville Public Works Commission.

- e. In all cases the Fayetteville Public Works Commission shall be the sole judge as to whether a proposed substitution is to be accepted. The Contractor shall abide by the Fayetteville Public Works Commission 's decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item, or substitute, as specified. No substitute items shall be used in the Work without written acceptance of the Fayetteville Public Works Commission. The Fayetteville Public Works Commission reserves the right to reject any such proposed changes or substitutions at their sole discretion, and is under no obligation to justify their decision.
 - f. Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.
- P. Complete Submittals: Each submittal shall be complete in all aspects incorporating all information and data required to evaluate the products' compliance with the Contract Documents. Partial or incomplete submissions shall be returned to the Contractor without review.
- a. Shop Drawing Distribution: The Contractor shall submit a minimum of five (5) copies of all shop drawings to the Fayetteville Public Works Commission for review. Shop drawings will be reviewed, stamped and distributed with the appropriate box checked either "APPROVED", "APPROVED AS NOTED", "NOT APPROVED" or "REVISE AND RESUBMIT". The Fayetteville Public Works Commission shall return three (3) copies to the Contractor and retain two (2) copies

If the Contractor requires additional copies of returned shop drawings, he shall include extra Drawings in his original submittal. The Fayetteville Public Works Commission will process the Drawings and return them to the Contractor.

1.04 RECORD DRAWINGS

- A. The Contractor shall maintain a clean, undamaged set of color prints of Contract Drawings and shop drawings to be marked up for submittal as record drawings. The set shall be marked with red erasable pencil to show the actual installation where the installation varies substantially from the Work as originally shown. Where shop drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. The Contractor shall give particular attention to concealed elements that would be difficult to measure and record at a later date. The record drawings shall be signed and dated by the Contractor's project manager.
- B. The Contractor shall submit one (1) set of their record drawings to the Fayetteville Public Works Commission upon completion of the project. Final payment will not be made until the record drawings are received.

1.05 PRODUCT SAMPLES

- A. Contractor shall furnish for review all product samples as required by the Contract Documents or requested by the Fayetteville Public Works Commission to determine compliance with the specifications.
- B. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish or texture and shall be properly labeled to show complete project identification, the nature of the material, trade name of manufacturer and location of the Work where the material represented by the sample will be used.
- C. Samples shall be checked by the Contractor for conformance to the Contract Documents before being submitted to the Fayetteville Public Works Commission and shall bear the Contractor's stamp certifying that they have been so checked. Transportation charges on samples submitted to the Fayetteville Public Works Commission shall be prepaid by the Contractor.
- D. Fayetteville Public Works Commission's review will be for compliance with the Contract Documents, and his comments will be transmitted to the Contractor within 15 business days of receipt.
- E. Acceptable samples will establish the standards by which the completed Work will be judged.

1.06 CERTIFICATES OF COMPLIANCE

- A. Copies of certificates of compliance and test reports shall be submitted for requested items to the Fayetteville Public Works Commission prior to request for payment.

1.07 WARRANTIES

- A. Original warranties, called for in the Contract Documents, shall be submitted to the Fayetteville Public Works Commission. When warranties are required for an item, the warranty shall be submitted prior to request for payment of that item.
- B. When warranties are requested, a sample of the warranty to be provided shall be submitted with, and considered part of, the shop drawings.
- C. The Contractor shall warrant to the Fayetteville Public Works Commission that all material and labor used in the construction are covered by his warranty for a minimum of a one (1) year period upon approval and acceptance by the Fayetteville Public Works Commission. The Contractor shall replace or repair defects at no cost to the Fayetteville Public Works Commission during the warranty period.

*** END OF SECTION ***

**DIVISION 1
01310 - CONSTRUCTION SCHEDULE**

PART 1. GENERAL

1.01 WORK INCLUDED:

- A. This section specifies requirements and procedures in preparing and updating construction schedules and reports for planning, coordinating, executing and monitoring the progress of the work. The construction work shall be scheduled to be completed within the specified duration of the Contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Supplementary Conditions
- B. General Conditions
- C. Submittals

1.03 SCHEDULING RESPONSIBILITIES

- A. The construction schedule will be used to monitor job progress. The Contractor will be responsible for providing all information concerning the sequencing, logic and durations of planned activities. The Contractor will be responsible for providing monthly update information on logic changes, percent complete, actual start and finish dates and duration changes. The Contractor will be required to produce the monthly, computerized printout of the schedule updates.
- B. Assembling the initial schedule in hand drawn or computer-generated (preferred) form is the responsibility of the Contractor.
- C. It should be clearly understood that the initial schedule and all update information must be provided by the Contractor and that this information is a representation of the best efforts of the Contractor and his subcontractors as to how they envision the work to be accomplished. Similarly, all progress information to be provided by and through the Contractor must be an accurate representation of his or his subcontractors' or suppliers' actual performance. The schedule shall at all times remain an accurate reflection of the Contractor's actual or projected sequencing of the work. Once accepted, adherence to the schedule shall be obligatory upon the Contractor and his subcontractor for the work under this Contract. Owner may require the Contractor to revise the schedule if, in the Project Engineer's judgment, the schedule does not accurately reflect the actual extension of the work, or is in violation of any provision of the Contract Documents. The Contractor shall provide the necessary information required to revise the schedule as often as is necessary during the course of performance of the work without additional cost to the Owner.

1.04 PROGRESS OF WORK

- A. The work shall be started on the date indicated in the Notice to Proceed and shall be executed with such progress as may be required to prevent delay to other contractors or to the general completion of this project. The Contractor shall at all times, schedule and direct his work so that it provides an orderly progression of the work to completion within the specified Contract Time. The Contractor shall account for traffic control requirements, access of citizens within the work area and the requirements for timely restoration.
- B. The Contractor agrees that, whenever it becomes apparent from the current monthly schedule update that delays to the planned progress of work have resulted and these delays are through no fault of the Owner and hence, the Contract completion date will not be met, or when so directed by the Project Engineer, he will prepare a recovery schedule outlining steps to recover time and to complete the project on schedule.
- C. The Contractor shall submit for review a written statement of the steps he intends to take, to remove or arrest the delay to the schedule. The Contractor shall promptly provide such level of effort at no additional cost to the Owner. In addition, should schedule delays persist; the Contractor's surety will be asked to attend a schedule update meeting.
- D. Failure of the Contractor to comply with the requirements of this provision shall subject him to, at the Owner's sole discretion, withholding, in partial or in total, payments otherwise due the Contractor for work due under this Contract. The Contractor agrees that any withholding of monies is not a penalty for noncompliance, but is an assurance for the Owner that funds will be available to implement these requirements should the Contractor fail to do so, since failure of the Contractor to comply with these requirements shall mean that the Contractor failed to execute the work with such diligence as to ensure its completion within the time for completion.

PART 2. CONSTRUCTION SCHEDULE

2.01 SCHEDULE REQUIREMENTS

- A. The schedule shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned by the Contractor. The schedule shall show how the start date of a given activity is dependent on the completion date of preceding activities how its completion restricts the start of succeeding activities. A time scaled precedence format will be followed. The schedule shall indicate the start date, completion date, and duration (in days), of each activity.

- B. The Schedule Activities shall be developed into two major groups:
1. Construction Activities - Construction activities will be physical work activities that describe how the job will be constructed. Work shall include planned restoration and paving.
 2. Post Construction Testing, Start-up, Training and Close-out - Activities for this group shall include all work required satisfying appropriate specification requirements sections and meeting the requirements of final completion. There are at least three (3) mandatory activities: Punch list, Final Walkthrough and Project Complete.
- C. The Contractor shall break the work into activity durations of one to twenty (1 to 20) working days each, except for non-construction activities (such as procurement of materials and delivery of equipment) and other activities that may require longer durations. To the extent feasible, activities related to a specific physical or geographic area of the project should be grouped on the schedule for ease of understanding and simplification. The selection and number of activities shall be subject to the review of the Project Engineer.
- D. Each activity on the schedule shall have indicated for it the following:
1. Construction activities will be divided by easily recognizable division points such as stationing or street names, area of work, etc.
 2. A brief description of the activity will be included. If this description is not definitive, a separate listing of each activity and a descriptive narrative may be required.
 3. Where the contractor intends to perform work concurrently, a resource or crew identifier will be assigned to the activity to indicate parallel paths.
 4. Established PWC holidays and other non-work days will be excluded from the schedule.
- E. Failure to include on the schedule any element of work required for the performance of this Contract shall not excuse the Contractor from completing all work required within the applicable Contract Time.
- F. A schedule which shows a completion of any portion of the construction work prior to the Contract Time dates may be accepted but in no event shall be acceptable as a basis for a claim for any delay against the Owner by the Contractor.

PART 3. SCHEDULE OF SUBMITTALS

3.01 SCHEDULE IMPLEMENTATION

- A. Within ten (10) calendar days after the Notice to Proceed, the Contractor shall submit up to three (3) prints of a schedule showing the first forty-five (45) calendar days of the work. The Contractor will revise and resubmit the forty-five (45) day schedule until it is acceptable.
- B. Within (30) calendar days after the Notice to Proceed, the Contractor shall submit three (3) copies of their proposed construction schedule for the entire Contract duration.
- C. The Contractor may submit a schedule on disk in a format wholly compatible with Microsoft Project. Submission of an electronic schedule does not preclude any other of the aforementioned individual activity requirements.
- D. If a review of the submitted schedule indicates a work plan that will not complete the work within the Contract time, it shall be the responsibility of the Contractor to revise the schedule as required and resubmit it until it is acceptable. Failure by the Contractor to submit an acceptable schedule may, at the Owner's sole discretion, be cause for the withholding of any partial payment(s) otherwise due under the Contract.
- E. Acceptance of the schedule shall not constitute a representation by the Owner that the work can be completed as shown on the schedule.

3.02 SCHEDULE UPDATES

- A. The Contractor shall submit a Schedule Update on the Monday prior to the monthly progress meeting, (or as directed by the Project Engineer), to allow the Project Engineer to review the schedule. The schedule shall be up-to-date as of the previous Friday or as directed by the Project Engineer. Actual progress of the previous month shall be recorded and future activities will be reviewed. The duration of activities and their logical connections may be revised as needed. Decisions made at these meetings and agreed to by all parties are binding with the exception that no contractual completion dates will be modified without formal written requests and acceptance as specified in the Contract Documents. The Contractor must provide the following information for each update at a minimum:
 - 1. Actual start and finish dates for all completed activities.
 - 2. Actual start dates for all started but incomplete activities including remaining durations and/or percent completes.

3. Revisions in the logic, critical path or resource assigned to an activity that would affect the anticipated early start of all activities not yet started.
 4. Any approved extension of Contract time shall be included in the next monthly updating of the schedule.
- B. Provide a Monthly Progress Status Report that provides the following items:
1. Summarized revisions made to the Construction Schedule since the previous submittal.
 2. Work anticipated to be started during the next period, including those activities already in progress.
 3. Problem areas, anticipated delays, and the impact on the schedule.
 4. Corrective action.
 5. The effect of changes on schedules of other prime Contractors in adjacent work areas.
- C. Failure to provide update information listed above, or failure to attend progress meetings may result in the Owner withholding partial payments.

END OF SECTION

DIVISION 1
01400 - QUALITY CONTROL

QUALITY ASSURANCE

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 Fayetteville Public Works Commission, are inferior or of a lower grade than indicated, specified, or required will not be acceptable.

Source Limitations: To the greatest extent possible for each unit of Work, the Contractor shall provide products, materials, or equipment of a singular generic kind from a single source.

Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product, material, or equipment, the Contractor shall select an option which is compatible with other products and materials already selected. Compatibility is a basic general requirement of product/material selections.

PRODUCT EVALUATION

The Fayetteville Public Works Commission will employ and pay for the services of an independent testing laboratory for specified testing as outlined in these Contract Documents.

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 these Contract Documents, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of these Contract Documents, nor perform, accept or approve any of the Contractor's Work.

The Contractor shall allow the Fayetteville Public Works Commission ample time and opportunity for evaluation and testing materials to be used in the Work. The Contractor shall advise the Fayetteville Public Works Commission 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 at all times furnish the Fayetteville Public Works Commission 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 Fayetteville Public Works Commission 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.

The Fayetteville Public Works Commission will bear the cost of all tests, evaluation, or investigations undertaken by the order of the Fayetteville Public Works Commission Project Engineer for the purpose of determining conformance with these Contract Documents if such tests, evaluation, or investigations are not specifically required by these Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Fayetteville Public Works Commission as a result of such tests, evaluation, or investigations, the Contractor shall bear the full cost of any additional tests, evaluations and investigations, which

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

are ordered by the Fayetteville Public Works Commission to ascertain subsequent conformance with these Contract Documents.

EVALUATION AT PLACE OF MANUFACTURE

Unless otherwise specified, all products and materials shall be subject to evaluation by the Fayetteville Public Works Commission at the place of manufacture.

The presence of the Fayetteville Public Works Commission 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 these 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 Fayetteville Public Works Commission.

SAMPLING AND TESTING

Unless otherwise specified, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the referenced testing standard as applicable to the class and nature of the article or materials considered. However, the Fayetteville Public Works Commission reserves the right to use any generally-accepted system of sampling and testing which will satisfy the Fayetteville Public Works Commission that the quality of the workmanship is in complete accordance with these Contract Documents.

Any waiver by the Fayetteville Public Works Commission of any specific testing or other quality assurance measures shall not be construed as a waiver of any requirements of these Contract Documents. The Fayetteville Public Works Commission 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.

The Fayetteville Public Works Commission reserves the right to make independent investigations and tests. Failure of any portion of the Work to meet any of the requirements of these Contract Documents shall be reasonable cause for the Fayetteville Public Works Commission to require the removal, correction, and/or reconstruction of any such work in accordance with these Contract Documents. In addition to any other evaluation, observation or quality assurance provisions that may be specified, the Fayetteville Public Works Commission 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 these Contract Documents.

SITE INVESTIGATION AND CONTROL

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.

The Contractor shall inspect related and appurtenant Work and shall report in writing to the Fayetteville Public Works Commission 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.

RIGHT OF REJECTION

The Fayetteville Public Works Commission 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 these 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 Fayetteville Public Works Commission, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to these Contract Documents, such materials, no matter in what stage or condition of manufacture, delivery, or erection, may be subsequently rejected by the Fayetteville Public Works Commission.

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.

WATERTIGHTNESS OF STRUCTURES

It is the intent of these Contract Documents that all work shall be performed as required to ensure proper sealing so that groundwater and/or rainwater will not leak into any repaired collection line, service lateral, or manhole.

The Contractor shall provide at its own expense all labor, material, temporary bulkheads, pumps, water, measuring devices, etc., necessary to perform the required tests.

HYDRAULIC UPLIFT ON STRUCTURES

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.

TIME OF OBSERVATION AND TESTS

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 this Contract. The performance and cost of the required tests will be the responsibility of the Fayetteville Public Works Commission, unless otherwise specified in these Contract Documents. 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 Fayetteville Public Works Commission 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 Fayetteville

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Public Works Commission a minimum of twenty-four hours in advance of any such inspections shall be cause for the Fayetteville Public Works Commission 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.

*** END OF SECTION ***

**DIVISION 1
01700 PROJECT CLOSEOUT**

FINAL CLEANUP

The Contractor shall promptly remove all rubbish, unused materials, concrete forms, construction equipment, temporary structures and facilities, construction signs, tools, scaffolding, materials, supplies and equipment which may have been used in the performance of the Work. The Contractor shall broom clean paved surfaces and rake clean other surfaces of grounds. Final acceptance of the Work by the Fayetteville Public Works Commission will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

The Contractor shall thoroughly clean all materials, equipment and structures; all marred surfaces shall be touched up to match adjacent surfaces.

The Contractor shall remove spatter, grease, stains, fingerprints, dirt, dust, labels, tags, packing materials and other foreign items or substances from interior and exterior surfaces, equipment, signs and lettering.

The Contractor shall remove paint, clean and restore all equipment and material nameplates, labels and other identification markings.

The Contractor shall maintain cleaning until project is accepted by the Fayetteville Public Works Commission.

The Contractor shall:

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use each type of cleaning material on only those surfaces recommended by the cleaning material manufacturer.
- C. Use only materials which will not create hazards to health or property.

CLOSEOUT TIMETABLE

The Contractor shall establish dates for testing, acceptance periods, and on-site instructional periods (as required under this Contract). The dates shall be established a minimum of seven (7) calendar days prior to beginning any of the foregoing items, to allow the Fayetteville Public Works Commission sufficient time to schedule attendance at the activities.

FINAL SUBMITTALS

Before the final acceptance of the project, the Contractor shall submit to the Fayetteville Public Works Commission certain records, certifications, etc., which are specified elsewhere in these Contract Documents. Missing, incomplete or unacceptable items, as determined by the Fayetteville Public Works Commission, shall constitute grounds for withholding final payment to the Contractor. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in these Contract Documents:

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- A. Written Test results of project components.
- B. Written guarantees, where required.
- C. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
- D. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

PUNCH LISTS

Final cleaning shall be scheduled upon completion of the project.

The Fayetteville Public Works Commission will make his final inspection whenever the Contractor has notified the Fayetteville Public Works Commission that the work is ready for the inspection. Any work not found acceptable and requiring cleaning, repair and/or replacement will be noted on the punch list. Work that has been inspected and accepted by the Fayetteville Public Works Commission shall be maintained by the Contractor, until final acceptance of the entire project.

Whenever the Contractor has completed the items on the punch list, the Contractor shall notify the Fayetteville Public Works Commission that it is ready for final inspection. This procedure will continue until the entire project is accepted by the Fayetteville Public Works Commission. The final payment will not be processed until the entire project has been accepted by the Fayetteville Public Works Commission and all of the requirements in these Contract Documents have been satisfied.

TOUCH-UP AND REPAIR

The Contractor shall repair any and all damage to existing facilities and surfaces. If in the opinion of the Fayetteville Public Works Commission the repair work is not satisfactory, the Contractor shall make repairs until the Fayetteville Public Works Commission accepts it.

MAINTENANCE AND GUARANTEE

The Contractor shall comply with all maintenance and guarantee requirements of these Contract Documents.

Replacement of earth fill, backfill, or asphalt where it has settled below the required finish elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the Contractor which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the Contractor obtained a statement in writing from the affected private owner or public agency releasing the Fayetteville Public Works Commission from further responsibility in connection with such repair or resurfacing.

*** END OF SECTION ***

**DIVISION 2
SITE WORK
02110 - SITE CLEARING**

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 insure minimum interference with roads, streets, walks, 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, by the erection of timber barriers or by such other approved means. Such barriers must be placed and approved by the Engineer before construction operations can proceed. The protection shall include unnecessary cutting, breaking or skinning of roots; skinning and bruising of bark; smothering of trees by stockpiling construction materials or excavated material within the drip lines; 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 1½ inches 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 hole of the tree or main branch. Cuts more than 1½ inches in diameter thus made shall be painted with an approved tree wound paint.

CLEARING AND GRUBBING

Clearing shall consist of the felling, trimming and cutting of trees into sections, and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring within the areas to be cleared. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface except such trees and vegetation as may be indicated or directed to be left standing. Clearing operations shall be conducted so as to prevent damage by falling trees to trees left standing, to existing structures and installations and to those under construction, and so as to provide for the safety of employees and others.

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas. This material, together with logs and other organic or metallic debris not suitable shall be excavated and removed to a depth of not less than 3 feet below any subgrade shoulder and slope surfaces in excavated areas indicated to be grubbed and in areas indicated as construction areas under this contract such as areas for buildings, roads, streets, shoulder areas, sidewalks. Depressions made by grubbing shall be filled with suitable material compacted to make the surface conform to the original adjacent surface of

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the ground. The required fill material will not be measured or paid for but should be included as part of the grubbing cost. Grubbing inside the drip line of trees to be left standing shall be by hand methods.

The combined item of clearing and grubbing shall also include the removal and satisfactory disposal of fences, steps, walls, building foundations, pavement, other rubble and debris.

DISPOSAL

All timber, logs, stumps, roots, brush, rotten wood, and other debris from the clearing and grubbing operations shall be disposed of off-site in an approved disposal pit. Such approval will include the conditions covering the disposal of such logs and stumps without burning, including the disposal area off-site. The contractor will be responsible for compliance with all state and local laws and regulations. Burning of timber and other refuse is not allowed within the City of Fayetteville.

*** END OF SECTION ***

**DIVISION 2
SITE WORK
02111 - SITE CLEARING FOR PWC UTILITIES**

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 insure 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

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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.

*** END OF SECTION ***

**DIVISION 2
SITE WORK
02211 - GRADING FOR ROADS AND DRAINAGE**

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 topsoils, 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 Engineer. 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 Engineer.

Materials determined by the Engineer as too wet or too soft to provide a stable subgrade, foundation, or fill will be classified as unsatisfactory regardless of soil classification. The Engineer 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 Owner.

CONSERVATION OF TOPSOIL

Areas designated for operations that contain a blanket of soil, which is more satisfactory for the growth of grass than the embankment 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

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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 Engineer. The borrow material shall be approved by the Engineer 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 M 45 for soil classification A-i-a, A-i-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. 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 Owner 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 Engineer may require the Contractor to remove the materials and backfill with approved properly compacted material to the finished graded section. The Contractor shall conduct undercut operations in such a way that the Engineer can take the necessary measurements before any backfill is placed. Any material removed and backfilled without the approval of the Engineer, 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 smooth-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 from erosion, and any settlement or washing away that may occur from any cause, prior to acceptance, shall be repaired and grades re-established to the required elevations and slopes. 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.

*** END OF SECTION ***

**DIVISION 2
SITE WORK
02222 - EXCAVATION AND BACKFILLING FOR UTILITY SYSTEMS**

GENERAL

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

RELATED SECTIONS

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

MATERIALS

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

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

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

EXCAVATION

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

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

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

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

TRENCH EXCAVATION

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

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

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

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

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

PIPE LAYING

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

TRENCH SAFETY

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

TRENCH STABILIZATION (SHORING)

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

DEWATERING

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

BACKFILL

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

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

Backfill material around structures shall be placed in a manner that the structure will not be damaged. No backfill shall be placed around manholes, thrust blocks, or similar structures until

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the concrete has been allowed to cure for three (3) days. The backfill material shall be compacted as specified in subparagraph COMPACTION.

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

BORROW EXCAVATION (Select Backfill)

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

COMPACTION

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

<u>Area</u>	<u>Percent ASTM D-698 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.

*** END OF SECTION ***

**DIVISION 2
SITE WORK
02272 - EROSION CONTROL - GENERAL PROVISIONS**

GENERAL

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

EXECUTION

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

Silt Fence
Gravel Construction Entrance/Exit
Inlet Protection

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

MAINTENANCE

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

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

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

Gravel Construction

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

Sediment

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

Gravel Inlet

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

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

REMOVAL

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

*** END OF SECTION ***

**DIVISION 2
SITE WORK
02273 - TEMPORARY SILT FENCE**

GENERAL

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

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

MATERIALS

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

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

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

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

INSTALLATION

The Contractor shall install a 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.

*** END OF SECTION ***

**DIVISION 2
SITE WORK
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.

*** END OF SECTION ***

**DIVISION 2
SITE WORK
02275 - BLOCK AND GRAVEL INLET PROTECTION**

GENERAL

The Contractor shall install block and gravel inlet protection when storm drain inlets are to be made operational before permanent stabilization of the disturbed drainage area. The inlet protection applies to areas of heavy runoff and provides for overflow capacity to prevent excessive ponding; however, shallow temporary flooding should be anticipated.

INSTALLATION

The Contractor shall install the block and gravel inlet protection as shown on the detail drawing and at the locations indicated. As an option, the concrete blocks may be omitted and the entire structure made of gravel and stone. A structure made entirely of stone is commonly called a "gravel doughnut". In this case, keep the stone slope toward the inlet at 3:1 or flatter. Stone shall be washed stone with a minimum 3 inch size on the basin side for stability and 1 inch or smaller (No. 57) on the flow side.

*** END OF SECTION ***

SECTION 02447
HORIZONTAL DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 SCOPE

- A. Provide complete installation of high density polyethylene (HDPE) pressure pipe or fusible polyvinylchloride pipe (FPVC) at designated crossings by horizontal directional drilling (HDD) as indicated on the drawings.
- B. Work shall include, but not be limited, to the following:
 - 1. General site and access preparation necessary for construction operations.
 - 2. Assembly of HDPE or FPVC pipe.
 - 3. Hydrostatic testing of the pipe prior to installation (Contractor's option).
 - 4. Erection of drilling equipment.
 - 5. Drilling of a small diameter pilot hole.
 - 6. Reaming the pilot hole as specified herein to a diameter suitable for installation of the pipe.
 - 7. Pulling the assembled pipe through the reamed hole, along with the detector wire.
 - 8. Hydrostatic testing of pipe after installation.
 - 9. Cleanup and final restoration of work area.

1.02 REFERENCES

- A. Publications are referred to in the text by basic designation only.
 - 1. American Society for Testing and Materials (ASTM)
 - a. D1784 Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
 - b. D3350 Polyethylene Plastics Pipe and Fittings Materials
 - 2. American Water Works Association (AWWA)
 - a. B300 Hypochlorites
 - b. B301 Liquid Chlorine
 - c. C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
 - d. C105 Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids
 - e. C111 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
 - f. C150 Thickness Design of Ductile Iron Pipe
 - g. C151 Ductile-Iron Pipe, Centrifugally Cast, for Water
 - h. C153 Ductile-Iron Compact Fittings, 3-inch through 24-inch and 54-inch through 64-inch, for Water Service
 - i. C600 Standard for Installation of Ductile Iron Water Mains and Their Appurtenances
 - j. C651 Disinfecting Water Mains
 - k. C906 Polyethylene (PE) pressure Pipe and Fittings, 4 - 63 inch for Water Distribution and Transmission

1.03 SUBMITTALS

- A. Submit the following in accordance with Fayetteville PWC Procedures:
 - 1. Affidavit of Compliance: Affidavit shall attest that supplied products conform to the referenced standard and this specification and that all tests set forth in each

applicable referenced publication have been performed and that all test requirements have been met. Submit for each of the following materials:

- a. HDPE Pipe
 - b. FPVC Pipe
2. Catalog Data: Submit manufacturer's standard drawings or catalog cuts for the following. Clearly indicate equipment to be furnished for the Project including options to be provided.
 - a. HDPE Pipe
 - b. FPVC Pipe
 3. Test Reports: Submit for the following:
 - a. Field test including calibration report and pressure testing.
 4. Description of the arrangement of directional drilling including method of monitoring and controlling line and grade, schedule, and procedure of installation.
 5. Provide pipe manufacturer's recommended pull-back force to be utilized during installation.
 6. Log sheets as required herein.
 7. Provide certified as-built drawing (profile) upon completion of drilling.

1.04 QUALITY ASSURANCE

- A. Pipe manufacturer shall have an established quality control program responsible for inspecting and testing incoming and outgoing material.
- B. Manufacturer shall maintain permanent Quality Control (QC) and Quality Assurance records.
- C. Contractor shall employ personal that have a minimum of ten (10) similar installations of HDPE and/or FPVC by horizontal directional drilling as appropriate for the installation.
- D. Directional drilling method shall be mechanical with fluid assistance. Pneumatic, water jetting, jacking, and boring method will not be permitted.
- E. Install HDPE pipe and FPVC pipe by directional drilling in accordance with the best industry practice, manufacturer's recommendations and the Contract Documents.
- F. Equipment used to monitor pull-back force shall be calibrated prior to each installation.

PART 2 PRODUCTS

2.01 GENERAL

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

2.02 HIGH DENSITY POLYETHYLENE (HDPE) PIPE:

- A. The pipe shall conform to AWWA C906 and the following requirements:
 1. Pipe shall be certified and listed for potable water distribution products in accordance with NSF 61 and bear the NSF seal on each section of pipe.
 2. Outside diameter shall conform with ductile-iron pipe for pipes 20-inch and smaller and iron pipe size for 24-inch and above.
 3. Material for pipe manufacturing shall be PE 4710 high density polyethylene (HDPE) with a minimum ASTM D3350 cell classification of 445574C.
 4. Pipe shall be pressure class PC200 with a standard dimension ratio (DR) of 9.

- 5. Pipe shall be supplied with a stripe along the entire length to designate pipe use. Stripe color to as follows:
 - a. Blue – Water

2.03 FUSIBLE POLYVINYLCHLORIDE PIPE

- A. Fusible polyvinylchloride pipe shall conform to AWWA C900 and/or ASTM D2241 for most pressure use, as indicated in the drawings. Testing shall be in accordance with AWWA standards for all of these pipe types.
- B. Fusible polyvinylchloride pipe may conform to ASTM D3034 or ASTM F679 for non-pressure use, as indicated in the drawings.
- C. Fusible polyvinylchloride pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
- D. Fusible polyvinylchloride pipe shall be manufactured in standard 40 or 45 foot nominal lengths, with other lengths allowed upon request.
- E. Fusible polyvinylchloride pipe shall be the following color.

Color	Service
Blue	Potable water

- F. Pipe generally shall be marked per industry standards, and shall include as a minimum:
 - 1. Nominal pipe size
 - 2. PVC
 - 3. Dimension Ratio, Standard Dimension Ratio or Schedule
 - 4. Pipe legend or stiffness designation, or AWWA pressure class, or standard pressure rating for non-AWWA pipe
 - 5. AWWA Standard designation number or pipe type for non-AWWA pipe
 - 6. Extrusion production-record code
 - 7. Trademark or trade name
 - 8. Cell Classification 12454 and/or PVC material code 1120 may also be included.
- G. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults.

2.04 DI/HDPE TRANSITION FITTING:

- A. If HDPE is used, the D.I./HDPE mechanical joint adaptor shall consist of a molded or fabricated HDPE mechanical joint transition fitting, rubber gasket, a mechanical joint backup drive ring and mechanical joint tee bolts. Pipe stiffeners shall be employed to support the interior wall of the HDPE. The stiffeners shall support the pipe’s end and control the “necking down” reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel, with a wedged style design to fit the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE.

2.05 TRACER WIRE AND TEST PORTS

- A. Tracer wire shall be intended for and manufactured to withstand the rigors of directional drilling and shall be in accordance description, and installation, of continuous “detectable” identification wire in Fayetteville PWC Master Specification, Specification 02660, Water Distribution, PVC Pipe.

PART 3 EXECUTION

3.01 GENERAL

- A. Investigate the subsurface conditions at the crossing location.
- B. Provide water for the drilling process.
- C. Handle pipe in accordance with manufacturer's recommendation.
- D. Utilize pipe rollers during layout and pull-back operations to prevent excess sagging of the pipe. Pipe rollers shall be of sufficient size to fully support the weight of the pipe while being hydro-tested before installation and during pull-back operations.
- E. Directional drilling procedure shall include provisions to guard against electrical shock such as ground mats, ground cables, hot boots and gloves. Drilling equipment shall include an alarm system capable of detecting electrical current as it nears electrical lines.
- F. Maintain log sheets for drilling fluid pressure, flow rate, drill thrust pressure, pull-back force, drill head torque and drill head location plots at 20-foot intervals.
- G. Drilling fluids shall be inert and of no risk to the environment. No fluid will be utilized that does not comply with permit requirements and environmental regulations. Drilling fluid should remain in the bore hole to increase the stability of the surrounding soil and to reduce the drag on the pulled pipe.
- H. No additional payment will be made for failed attempts.

3.02 DIRECTIONAL DRILLING

- A. General
 - 1. Drill pilot hole along the path shown on the Drawings to the following tolerances:
 - a. Vertical Location - Plus or minus 1 foot
 - b. Horizontal Location - Plus or minus 6 feet.
 - 2. At the completion of the pilot hole drilling, provide a tabulation of coordinates referenced to the drilled entry point which accurately describes the location of the pilot hole.
 - 3. For drills under non-structural conditions, perform reaming diameter to 1.25 to 1.5 times the outside diameter of the pipe being installed. Prepare pipe to facilitate connection to the remainder of the pipeline being installed.
 - 4. For drills under structural conditions (i.e., roadways & retaining walls), perform reaming diameter to 2 inches maximum greater than outside diameter of the pipe being installed. If larger size is necessary, provide statement from North Carolina Professional Engineer stating that "an overbore in excess of 2-inches will arch and no damage will be done to pavement or sub-grade or retaining wall integrity".
 - 5. The bore laydown area is limited, so Contractor will have to perform intermediate fusions while installing the pipe.
- B. Polyethylene (PE) Pressure Pipe
 - 1. Joints at the ends of directionally drilled runs shall be fusion bonded to the adjacent pipe section. Mechanical couplings are not permitted. Fusion bonding may be accomplished through the use of butt fusion or electrofusion coupling techniques as specified.
 - 2. Use care to protect the pipe from scarring, gouging, or excessive abrasion.
 - 3. Method of connection between HDPE pipe and other pipe materials shall be as indicated on the Drawings
 - 4. Pipe shall be deflected within the tolerances as provided by the pipe manufacturer.

5. Allow one week from the time of installation for pipe to be connected other piping systems to allow tensional stresses to relax.

C. Fusible Polyvinylchloride (FPVC) Pipe

1. Fusion Process:

- a. Fusible polyvinylchloride pipe shall be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.
- b. Fusible polyvinylchloride pipe shall be fused by qualified fusion technicians holding current qualification credentials for the pipe size being fused, as documented by the pipe supplier.
- c. Pipe supplier's procedures shall be followed at all times during fusion operations.
- d. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine.
- e. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. This includes requirements for safety, maintenance, and operation with minor modifications made for PVC.

2. Installation:

- a. Pull heads for use with FPVC
 - 1) Pipe pull heads shall be utilized that employ a positive through-bolt design assuring a smooth wall against the pipe cross-section at all times.
 - 2) Pipe pull heads shall be specifically designed for use with fusible polyvinylchloride pipe, and shall be as recommended by the pipe supplier.
- b. Pipe shall be fused prior to insertion into continuous length as allowed by the site conditions.
- c. Contractor shall handle the pipe in a manner that will not over-stress the pipe prior to insertion. Vertical and horizontal curves shall be limited so that the pipe does not bend past the pipe supplier's minimum allowable bend radius, buckle, or otherwise become damaged. Damaged portions of the pipe shall be removed and replaced.
- d. The pipe entry area shall be graded as needed to provide support for the pipe and to allow free movement into the bore hole.
 - 1) The pipe shall be guided into the bore hole to avoid deformation of, or damage to, the pipe.
 - 2) The fusible polyvinylchloride pipe may be continuously or partially supported on rollers or other Owner and Engineer approved friction decreasing implement during joining and insertion, as long as the pipe is not over-stressed or critically abraded prior to, or during installation.
 - 3) A swivel shall be used between the reaming head and the fusible polyvinylchloride pipe to minimize torsion stress on the pipe assembly.
- e. Buoyancy modification shall be at the sole discretion of the Contractor, and shall not exceed the pipe supplier's guidelines in regards to maximum pull force or minimum bend radius of the pipe. Damage caused by buoyancy modifications shall be the responsibility of the Contractor.
- f. Once pull-back operations have commenced, the operation shall continue without interruption until the pipe is completely pulled through the bore hole.
- g. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, or movement and distortion of surface features. Any

damages caused by the Contractor's operations shall be corrected by the Contractor.

D. Tracer Wire and Test Ports

1. For all non-ferrous pipe, install tracer wire with the pipe when it is inserted into the borehole.
2. Secure tracer wire to the pipe and the pull head such that wire is installed the complete length of pipe.
3. Install multiple wires, if needed, to ensure a continuous, intact wire is installed with the pipe.
4. Install test ports to locate each end of the bore. At each test port, extend a loop of tracer wire to grade inside the box. The loop of wire inside the box shall be a minimum of three feet.
5. Test ports shall be located and included on record drawings.

3.03 CLEAN UP

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

3.04 FIELD TESTS

- A. Prior to Installation, Contractor may elect, at his expense, to hydrostatically test or perform a low pressure air test on the pipe line to determine the integrity of the butt fusion joints. This shall not be considered an alternative to the testing required after installation.
- B. Following installation, test pipe in accordance with Hydrostatic Tests and Sterilization per Fayetteville PWC Master Specification, Section 02660, Water Distribution.
- C. Following pipe installation, perform conductivity test on tracer wire to ensure pipe can be field located in the future.

END OF SECTION

**DIVISION 2
SITE WORK
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 and approval from the appropriate agency 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, Hope Mills, 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 Town of Hope Mills, City of Fayetteville, and NCDOT maintain traffic detection loops at various intersections throughout the project limits. Due to the location of the proposed

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utility improvements, it may be necessary for these detection loops to be damaged. The Contractor shall coordinate with the appropriate agency a minimum of three (3) days prior to excavating, in order for the agency to locate these loops, or make any necessary revisions to the traffic signal facilities.

The agency 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

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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.

END OF SECTION

**DIVISION 2
SITE WORK
02505 - ADJUSTMENT OF EXISTING STRUCTURES**

GENERAL

The work covered by this specification consists of the raising or lowering of existing manholes and valve boxes encountered within the limits of the project to match the adjacent finished work.

RELATED SECTIONS

- A. 02222 – Excavation and Backfilling for Utility Systems
- B. 02660 – Water Distribution
- C. 02730 – Sanitary Sewer Systems

Where conflicts occur between the specifications, the more stringent requirement shall apply.

MATERIALS

All materials shall be in strict accordance with the requirements of the Public Works Commission and as set forth in this standard.

Adjustable riser rings are not approved for use within the Public Works Commission water and/or sewer system. All manhole adjustments shall be done utilizing a concrete grade ring. If a concrete grade ring cannot be utilized, the manhole shall be broken down and rebuilt to the proper grade, in accordance with PWC standards.

INSTALLATION Adjustment of structures shall not be performed until after placement of base course and/or any leveling course, and prior to placement of final course. All adjustments of structures shall be accomplished a minimum of 72 hours prior to placing the final surface course. All defective, damaged, or worn castings shall be replaced with new castings provided by the Public Works Commission at no cost to the Contractor. The Contractor shall be responsible for exchanging castings at the Public Works Commission's facility.

The Contractor shall take all necessary precautions to prevent debris from entering the sanitary sewer system. Any debris that falls into the manhole or valve box during adjustment shall be removed immediately.

Manholes

For all manholes that need adjustment, the Contractor shall remove all concrete grade rings to the top of the cone section. All loose material shall be removed and properly disposed of. The Contractor shall utilize new concrete grade rings to ensure that the new manhole ring and cover will be at final grade. If no concrete grade rings are required to adjust the structure to final grade, the Contractor shall set the ring and cover in a bed of clean fresh mortar.

If the manhole needs to be lowered, and there are no existing concrete grade rings, then the Contractor shall tear down the existing manhole and rebuild it, utilizing new riser and cone

sections, in order to ensure that the installed ring and cover will be at final grade. The Contractor shall remove all necessary sections of the existing manhole in order to make the adjustment.

If the manhole needs to be raised, and there are 12-inches of concrete grade rings already in place, the Contractor shall tear down the existing manhole and re-build it. The Contractor shall utilize new riser and cone sections, as required, to ensure that the installed ring and cover will be at final grade. The Contractor shall remove all necessary sections of the existing manhole in order to make the adjustment.

Valve Boxes

In order to adjust valve boxes, the top section of the valve box shall be raised or lowered as required to meet the final grade. If the height of the final grade exceeds the length of the existing top section, the Contractor shall remove the existing valve box and install a new one at final grade.

All adjustments shall be protected for at least 72 hours before the placement of any surfacing material, in order to allow the concrete to properly set. The Contractor shall be responsible for protecting the raised structure from damage due to traffic. After the 72 hours, a temporary asphalt transition shall be placed around the raised structure, to allow vehicular traffic to pass over. The asphalt transition shall extend a minimum of 18 inches from the structure in every direction. The Contractor shall be responsible for maintaining this asphalt transition until such time the final surface course is placed. Immediately prior to paving, the asphalt transition shall be removed. In the event paving is stopped for the day prior to completing the work, the Contractor shall re-install the temporary asphalt transition. The finish surface tolerance shall not vary more than ¼" (0.25 inch) in any direction. Every effort shall be made to ensure that the surface course and castings provide as smooth a ride as possible.

END OF SECTION

**DIVISION 2
SITE WORK
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

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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.

END OF SECTION

**DIVISION 2
SITE WORK
02574 – TEMPORARY PAVEMENT PATCH**

GENERAL

Open cutting and replacing existing pavement shall be performed in accordance with these Contract Documents. The materials and installation shall conform to the North Carolina Department of Transportation Standard Specification (most recent edition), the NCDOT HMA/QMS Manual (most recent edition), and as specified herein. Encroachment permits will be obtained by the Public Works Commission, but all necessary insurance as required by NCDOT shall be furnished and paid for by the Contractor.

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 (most recent edition).

Asphalt Surface Course

Where streets are indicated to be temporarily patched and overlaid with an asphalt surface course, the patch shall be constructed of asphalt intermediate course, Type I-19.0. The Asphalt Intermediate Course, material shall be in accordance with NCDOT Standard Specifications for Roads and Structures (most recent edition) and the NCDOT HMA/QMS Manual (most recent edition).

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 NCDOT HMA/QMS Manual (most recent edition).

The temporary pavement patch shall be a minimum three (3) inches compacted thickness and extend a minimum of six (6) inches beyond the edge of the trench in accordance with the PWC Standard Detail. No more than 24 hours prior to patch paving, the Contractor shall remove the upper three (3) inches of backfill 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 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 temporary pavement patch shall be made within thirty (30) days of installation of the line. If settlement should occur within the 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.

END OF SECTION

02575 – DRIVEWAY REPLACEMENT GENERAL

Removal and replacement of existing driveways is required as indicated in the Contract Drawings and shall conform to the requirements of this Specification and the Contract Documents. The Contractor shall furnish all labor, equipment, materials, and incidentals necessary for the removal and replacement of the driveways disturbed as part of the utility construction. The intent and purpose of these specifications is to require a complete and satisfactory installation in every respect and any defects in material or workmanship 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.

All work shall be done in accordance with the terms and conditions outlined herein, the Public Works Commission "Manual for the Design and Construction of Water and Wastewater System Extensions" (most recent edition), in accordance with the North Carolina Department of Transportation "Standard Specifications for Roads and Structures" (most recent edition), and subject to final approval and acceptance by the Public Works Commission. In case of conflicting requirements between this Specification and the above referenced documents, this Specification shall govern.

The Contractor shall provide resident's access to their driveways at all times. The Contractor shall coordinate with the resident to provide access to their home during removal and replacement of the driveway. The Contractor shall make every attempt to coordinate their efforts with the schedule and wishes of the resident.

RELATED SECTIONS

- A. 02222 – Excavation and Backfilling for Utility Systems

REMOVAL

The Contractor shall provide a neat edge along the concrete or asphalt driveway pavement being retained by sawing, straight and true, approximately two (2) inches deep before breaking away. The portion of driveway to be removed shall be as indicated on the Contract Drawings or as directed by the PWC Project Coordinator. The concrete or asphalt driveway pavement shall be removed for its entire depth, removed from the site, and disposed of at the Contractor's sole expense.

The Contractor shall remove the existing gravel drive to the limits shown on the Contract Drawings or as directed by the PWC Project Coordinator. The driveway shall be removed for its entire depth, removed from the site, and disposed of at the Contractor's sole expense.

ASPHALT DRIVES

Replacing the asphalt driveway shall consist of the following:

Base Course:

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The stabilized aggregate base course shall be installed to a minimum eight (8) inches compacted thickness as indicated on the Asphalt Driveway Patch Detail. 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. In lieu of utilizing aggregate base course, the Contractor, with approval from the City of Fayetteville, may utilize a minimum of four (4) inches of I-19.0 intermediate course.

In locations approved by the PWC Project Engineer, where the stone base course is to remain for a defined period of time prior to asphalt paving, the stone base course shall be maintained by the Contractor. Maintenance shall include sweeping the adjoining pavement, blading and/or leveling the stone, compacting and wetting the stone to insure smooth driveable surface. The Contractor shall have on the project the proper equipment to complete this work. Maintenance shall be performed at least weekly, after a rainfall, or at the direction of the PWC Project Engineer.

Tack Coat:

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

Bituminous Concrete Surface Course:

The bituminous concrete surface course shall be Type SF9.5, placed in a two (2) inch minimum thickness or to the existing full depth thickness whichever is greater and in strict accordance with the North Carolina Department of Transportation Standard Specifications for Roads and Structures (most recent edition).

CONCRETE DRIVES

Where new concrete is to be placed against existing concrete, preformed expansion joint filler, three-quarter inches in width and of a depth extending for the full thickness of the slab, shall be used. All concrete shall have a minimum 28 day compressive strength of 3,000 psi and shall be placed to the same thickness as the removed portion except that in no case shall any new slab be less than five (5) inches thick. The concrete shall be accurately screed to produce a uniform surface, floated, and given a broom finish. All work shall be in accordance with PWC standard details and City of Fayetteville requirements.

GRAVEL DRIVES

Gravel driveways shall be restored or replaced in all locations disturbed by construction. The replacement gravel driveway shall consist of six (6) inches thick compacted Number 57 stone or aggregate base course stone, whichever matches or more closely matches the existing gravel driveway.

ACCEPTANCE

Acceptance of the installed driveways shall be based on the conformance with the requirements outlined herein, the Public Works Commission's review of the installation, and written concurrence from the property owner. The Public Works Commission will not accept any installation without the written release from the property owner. The Contractor shall be responsible for obtaining the written release from the property owner.

WARRANTY

If settlement should occur within one (1) year, the Contractor shall repair/re-pave the area to provide a smooth transition between the new and existing driveways. The finished product shall be neat in appearance and of equal or exceeding quality of the surrounding driveway or area.

END OF SECTION

02584 - ROADWAY AND PARKING LOT MARKING

GENERAL

The pavement markings shall be in strict accordance with both NCDOT Standard Specifications for Roads and Structures (most recent edition) and U.S. Department of Transportation, Federal Highway Administration's Manual for Uniform Traffic Control Devices for Streets and Highways.

MATERIALS

The traffic and zone marking paint shall be white, yellow or blue alkyd-chlorinated rubber chlorinated paraffin as manufactured by PPG Industries, General Paint and Chemical Company, Sherwin-Williams or an approved equal. The paint shall be in accordance with AASHTO M248, Type III.

INSTALLATION

The Contractor shall lay out all work including traffic lanes, arrows, spaces, handicap aisles, etc and other pavement markings as indicated on the Contract Drawings. Prior to the application of any paint, the pavement surface shall be cleaned of all dirt, trash and the surface shall be free of any material that would prevent adherence of paint. The paint shall be applied to a dry surface using either a template or striping machine. Stripes shall be uniform weight and width. Stripe width shall be 4 inches unless otherwise shown on the Contract Drawings.

END OF SECTION

**DIVISION 2
SITE WORK
02660 - WATER DISTRIBUTION**

GENERAL

Water lines and all appurtenant items shall be constructed of materials specified and/or as indicated on the approved drawings. The intent and purpose of these specifications is to require a complete and satisfactory installation in every respect and any defects in material or workmanship shall be cause for the replacement and correction of such defect as directed by the Fayetteville Public Works Commission (PWC) at no expense to the Fayetteville Public Works Commission.

RELATED SECTIONS

- A. 02211 – Grading, Utilities
- B. 02222 – Excavation and Backfilling for Utility Systems
- C. 02301 – Boring And Jacking (Roadways And Railroads)

MATERIALS

MANUALLY OPERATED GATE VALVES

All manually operated gate valves four (4) inches and larger shall be ductile iron or cast iron body resilient wedge type rated for 250 psig working pressure gate valves and shall conform to American Water Works Association (AWWA) C-509/C-515 and NSF 61. All valves must open counter-clockwise equipped with a two (2) inch square operating nut. The operating nut shall have an arrow cut in the metal, indicating the direction of opening. All valves shall have a non-rising stem. All valves up to and including thirty-six (36) inch diameter shall have triple "O" ring stem seals. The design and machining of valves shall be such as to permit the replacement of the upper two (2) "O" rings without undue leakage while the valve is wide open and in service. The wedge shall be ductile iron encapsulated in nitrile rubber (for four (4) inch through 12 inch) and SBR rubber for 14-inch through 24-inch sizes.. All internal and external surfaces of the valve body and bonnet shall have a fusion bonded epoxy coating complying with ANSI/AWWA C550 applied electrostatically prior to assembly, conforming to AWWA C-550-90. All valves up to and including 36-inch diameter shall have a safe working pressure of 250 psi. Valve connections shall be as required for the piping in which they are installed. Valves shall have a clear waterway equal to the full nominal diameter of the valve. All valves shall be tested for leakage and distortion in strict accordance with the latest revision of AWWA Specification C-500.

Gate valves installed in meter vaults shall have a wheel in lieu of a square operating nut and shall also have a non-rising stem. The wheel shall have an arrow cut in the metal indicating the direction of opening. Flanges shall not be buried. An approved pit shall be provided for all flange connections.

Resilient seated tapping valves shall be furnished with the tapping flange having a raised face or lip designed to engage the corresponding recess in the tapping sleeve flange in accordance with MSS-SP60. Tapping valves without the raised face on the tapping flange are not permitted since

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they do not assure the proper alignment required to prevent damage by a misaligned shell cutter. The interior of the waterway in the body shall be a full opening and capable of passing a full sized shell cutter equal to the nominal diameter of the valve.

All valves shall be manufactured in strict accordance with the latest specifications of the American Water Works Association (AWWA). Valves shall be manufactured by: Mueller Company, Clow Corporation, or American Darling Company. Certification shall be furnished to the Fayetteville Public Works Commission by the manufacturer that all valves are in accordance with PWC standards. Where specified on the plans and approved by the Fayetteville Public Works Commission, resilient wedge gate valves may be furnished with spur gearing for valves installed in a vertical position and bevel gearing for valves installed in a horizontal position. All gate valves shall be installed in accordance with PWC standard details.

BALL VALVES

For all valves smaller than four (4) inches, ball valves shall be used. Ball valves shall be installed in accordance with PWC standard details.

Ball valves shall be all bronze construction, with tee head operator and having a removable disc. Ball valves shall have threaded connections, in accordance with PWC standard details. Ball valves shall be manufactured and tested in accordance with AWWA/ANSI C800. The valve shall be equipped with packing nut, gland, and packing material. Ball valves shall be of an approved type made from approved materials conforming to ASTM Specifications and shall also meet the approval of the Public Works Commission. The turn required to travel from fully closed to fully open on the ball valve shall be 90 degrees.

VALVE BOXES

Valve boxes shall be "slip-type" made of close-grained, gray cast iron metal painted with a protective asphaltic coating. Construction shall be in three pieces as follows: The lower of base pieces, which shall be flanged at the bottom, the upper part which shall be flanged on the lower end, and of such size as to telescope over the lower part, the upper end being constructed in the form of a socket to receive the cap or cover; and the cover or cap shall have cast on the upper surface, in raised letters, the word "WATER". All valve boxes shall be equal in quality and workmanship to those manufactured by Sigma Corporation (VB-462), Tyler Union (6855 Series), Star Pipe Products (VB-0004), or an approved equal. The valve box shall be installed in accordance with PWC standard details. The valve box shall have a 3/8-inch hole drilled in the upper part four (4) to six (6) inches from the top of the box to accommodate a 1/4-inch x 1-1/2-inch galvanized bolt for securing tracer wire.

Valve box protector rings shall be installed to protect valve boxes located outside pavement. The ring shall be constructed and installed in accordance with PWC standard details.

FIRE HYDRANTS

All fire hydrants shall be dry barrel, traffic type and conform to the latest revision of AWWA Specification C-502 except as listed below or as otherwise directed by the Public Works Commission. All working parts shall be bronzed. The size of the fire hydrants (designated by the

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nominal diameter of the valve opening) shall not be less than four and one-half (4 ½) inches. All hydrants shall be able to deliver a minimum of 1,000 gallons per minute with a friction loss of not more than five (5) pounds per square inch (psi) total head loss through the hydrant. Hydrants shall be of compression type (opening shall be of such design that when the barrel is broken off the hydrant valve will remain closed and reasonably tight against leakage). All hydrants shall be mechanical joint to accommodate the spigot end of six (6) inch Pressure Class 150, AWWA Standard, ductile iron pipe. The installation of the fire hydrant shall be in accordance with PWC standard details. Bosses (6") may be substituted for tees in pipe sizes exceeding 24 inches in diameter, with prior approval from PWC. The boss shall be welded to the bottom of the main to provide effective flushing of the system.

All hydrants shall be furnished with two (2) two and one-half (2 ½) inch nozzles and one (1) four and one-half (4 ½) inch pumper nozzle. Outlets shall have American National Standard fire hose coupling thread, in accordance with the City of Fayetteville standard, and shall be provided with nozzle caps securely chained to the body of the hydrant. The base of the hydrant shall have two (2) cast lugs suitable for use in strapping the hydrant to the connecting pipe. The operating nut shall be pentagonal in shape, finished with a slight taper to one and one-half (1 ½) inches from point to flat to conform to the standard wrench used by the Fayetteville Public Works Commission. All hydrants shall open left or counter-clockwise. Hydrants shall be suitable for working pressure of 150 psi and a test pressure of twice the working pressure. Fire hydrants shall be specific models manufactured by Mueller Company (Model Centurian 200), Clow Corporation (Medallion), American Darling (Model Mark 73-1) or approved equal. The interior of the hydrant shoe shall be coated with a four (4) mil thickness FDA approved epoxy coating.

COMBINATION AIR VALVES ASSEMBLY

Combination air valves shall be of the single housing style that combines the operation features of both an air/vacuum and air release valve. The combination air valve shall have a two (2) inch inlet and one (1) inch outlet connections and an orifice diameter to be determined by the Design Engineer for each project for a maximum working pressure of 300 psi. The assembly shall be equipped with a two (2) inch cut-off valve as shown on the PWC standard detail. The combination air valve body shall be constructed of 316 stainless steel or reinforced nylon with the only exception being the Buna-N Rubber seat and gasket. Valves shall be as manufactured by Crispin (Model UX20), ARI (D-020), or approved equal. Combination air valves shall be installed in accordance with PWC standards.

WATER DISTRIBUTION PIPE

DUCTILE IRON PIPE

The raw material from all ductile iron pipe and fittings shall have an average minimum content consisting of 90% recycled iron and steel. Ductile iron pipe and fittings shall be manufactured in the United States of America in accordance with ANSI/AWWA A21.51/C151. The manufacturer of the ductile iron pipe shall be a member of the Ductile Iron Pipe Research Association (DIPRA).

All ductile iron pipe shall be designated as "Pressure Class", unless otherwise specified. The pipe furnished shall have a minimum thickness calculated in accordance with ANSI A 21.50 (AWWA C-150), with a factor of safety of two (2); a working pressure of 150 psi to 350 psi, plus 100 psi

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water hammer allowance; and AASHTO H-20 live truck load with 2.5 feet of cover. In no case shall "Pressure Class" pipe's nominal thickness be less than the following:

<u>SIZE</u>	<u>PRESSURE CLASS</u>	<u>NOMINAL THICKNESS (In.)</u>
4"	350	0.25
6"	350	0.25
8"	350	0.25
10"	350	0.26
12"	350	0.28
16"	250	0.30
24"	250	0.37

PUSH-ON JOINTS

Push-on joints shall be as specified and installed in accordance with AWWA C-600 and shall conform to AWWA Standard C-111. Push on joints, rubber gaskets and lubricant shall conform to ANSI A21.11. Pressure rating shall not be less than 200 psi unless otherwise specified. All ductile iron pipe shall be lined with standard thickness cement mortar lining and asphaltic seal coat in accordance with ANSI A21.4 (AWWA C-104). The pipe shall have an outside asphaltic coating as specified in AWWA Standard C-151.

RESTRAINED JOINTS

Factory Restrained Joints

Factory restrained joint pipe shall be utilized for all pipe greater than 12-inches in diameter, unless otherwise approved by the Fayetteville Public Works Commission. Factory restrained joint pipe shall be furnished for the locations shown on the approved drawings. The pipe, joints, and gaskets shall be in accordance with ANSI/AWWA Standards as specified for ductile iron pipe. Factory restrained joints shall be rated for a working pressure of 350 psi for sizes up to 12-inches and 250 psi for larger sizes.

All factory restrained joint pipe shall have the restraints internal to the pipe (i.e., "boltless"). All restrained joint ductile iron pipe and fittings larger than 12-inches shall be as manufactured by U.S. Pipe's TR-Flex, Griffin Pipe Products SNAP-LOK, American Cast Iron Pipe Company's Flex-Ring Joint, or approved equal. The method of restraining the valves to the factory restrained ductile iron pipe shall be reviewed and approved by PWC on a case by case basis. The valves shall have the same working pressure as the pipe.

Flanged Joints

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 inch thickness. Linings and coatings shall be as previously outlined for all ductile iron pipe and fittings.

Mechanical Joints

Mechanical joints shall be as specified and 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 (4) inch pipe through 12-inch pipe. Mechanical joints, rubber gaskets and lubricant shall conform to ANSI A21.11. Pressure rating shall not be less than 200 psi unless otherwise specified.

Special accessories such as mechanical joint retainer glands or mega-lugs are acceptable on pipe 12-inches and less in diameter, upon approval from the Fayetteville Public Works Commission. Mega-lug and/or grip-ring restraint mechanisms will not be an acceptable method of restraint for pipe, fitting and/or valves on sizes larger than 12-inches in diameter. For mains larger than 12-inches and at locations specified by the Fayetteville Public Works Commission, factory restrained joints shall be utilized, in accordance with these Specifications.

Field Lok Gaskets

Special accessories such as US Pipe's Field-LOK gasket, Ford's Uni-Ring, or Romac's Grip-Ring are acceptable on pipe 12-inches and less in diameter, upon approval from the Fayetteville Public Works Commission. Mega-lug and/or grip-ring restraint mechanisms will not be an acceptable method of restraint for pipe, fitting and/or valves on sizes larger than 12-inches in diameter. For mains larger than 12-inches and at locations specified by the Fayetteville Public Works Commission, factory restrained joints shall be utilized, in accordance with these Specifications.

FITTINGS

Mechanical Joint

All fittings shall be ductile iron and shall be manufactured in accordance with AWWA Standard C-110 (ANSI A21.11). Compact fittings shall be mechanically restrained, ductile iron in accordance with ANSI A 21.53 (AWWA C-153) for four (4) inch through 12 inch sizes only. Where thrust blocking is utilized, fittings shall be full body ductile iron in accordance with ANSI A 21.53 (AWWA C110).

All ductile iron fittings shall be lined with standard thickness cement mortar lining and asphaltic seal coat in accordance with ANSI A21.4 (AWWA C-104). All fittings shall have an outside asphaltic coating as specified in AWWA Standard C-151 and C-110, respectively.

Factory Restrained

Factory restrained joint fittings shall be utilized for all pipe greater than 12-inches in diameter, unless otherwise approved by the Fayetteville Public Works Commission. Factory restrained joint fittings shall be furnished for the locations shown on the approved drawings. The fittings, joints,

and gaskets shall be in accordance with ANSI/AWWA Standards as previously specified for ductile iron pipe. Factory restrained joints shall be rated for a working pressure of 350 psi for sizes up to 12-inches and 250 psi for larger sizes. All factory restrained joint fittings shall have the restraints internal to the fitting (i.e., "boltless"). All fittings shall be compatible with the factory restraint system. All restrained joint ductile iron fittings larger than 12-inches shall be as manufactured by U.S. Pipe's TR-Flex, Griffin Pipe Products SNAP-LOK, American Cast Iron Pipe Company's Flex-Ring Joint, or approved equal.

Bosses

Tangential welded on outlets (i.e., bosses) shall only be utilized on pipe 24-inches and larger, as approved by PWC. All bosses shall be factory welded; field fabrication is not allowed. The pipe shall be in accordance with these specifications. Bosses shall be of the size and location indicated on the approved drawings.

AERIAL CROSSINGS

For aerial crossings, the ductile iron pipe shall be thickness class, as specified on the plans and standard details. All thickness class pipe shall be in accordance with ANSI A21.51 and AWWA C-151, with a minimum working pressure of 200 psi.

For aerial crossings which are four (4) inches to 12 inches in diameter, Class 53 manufactured factory restrained joint or Class 53 flanged ductile iron pipe shall be used in accordance with the PWC standard details. No other means of restraint are allowed for aerial crossings. For aerial crossings larger than 12 inches, or as noted specifically on the plans, Class 53 flanged ductile iron pipe shall be used in accordance with the PWC standard details.

All aerial crossings shall be designed and installed in accordance with PWC standard details.

PIPE IN CASINGS

All ductile iron pipe (regardless of diameter) within casings shall be factory restrained, in accordance with these specifications and the applicable PWC standard details. The use of any other restraints (i.e., mega-lugs, grip-rings, etc.) shall not be utilized on pipe within casings.

All restrained joint ductile pipe in casings shall be in accordance with the PWC standard details.

TRENCHLESS APPLICATIONS

All ductile iron pipe (regardless of diameter) utilized for trenchless installations (i.e., horizontal directional drilling, pipe-bursting, etc.) shall be factory restrained, in accordance with these specifications and the applicable specification section for the trenchless technology. The use of any other restraints (i.e., mega-lugs, grip-rings, etc.) shall not be utilized.

PVC PIPE

Two (2) inch water main pipe shall be manufactured using Grade 1 PVC compound material as defined in ASTM D-1784 and shall be SDR21, pressure class 200 in accordance with ASTM D

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2241. Fittings for two (2) PVC pipe shall be solvent weld Schedule 80 PVC. Brass FIP x pack joint for PVC fittings shall be used to transition from PVC to brass. The pipe shall be plainly marked with the manufacturer's name, size, material (PVC) type and grade or compound, NSF seal, date of manufacture, pressure rating and reference to appropriate product standards.

All PVC pipe (4-inches through 12-inches diameter) shall be manufactured using virgin compounds as defined in ASTM D-1784, with a 4,000 psi HDB rating and designated as PVC 1120 to be in strict accordance with AWWA C-900. The pipe shall be Class 150 and conform to the thickness requirements of DR18. The pipe shall be manufactured to withstand 755 psi quick burst pressure tested in accordance with ASTM D-1599 and withstand 500 psi for a minimum of 1,000 hours tested in accordance with ASTM D-1598. The pipe joints shall be of the integral bell type with rubber gaskets and shall conform to the requirements of ASTM D-3139 or ASTM F-477.

PVC fittings are not acceptable for water mains four (4) inches or greater. Fittings and specials shall be ductile iron, bell end in accordance with AWWA C-110, 150 psi pressure rating unless otherwise shown or specified. Ductile iron fittings to PVC pipe shall be adequately supported on a firm trench foundation. Ductile iron fittings and specials shall be cement mortar lined (standard thickness) in accordance with ANSI A21.4.

Mechanical restraining systems (i.e. mega-lug, grip-ring) shall not be used on PVC pipe.

TRACING WIRE

For the purpose of locating non-metallic pipes, a continuous "detectable" tracing wire shall be installed. The wire shall be a minimum 12 gauge, single strand, coated copper or copper clad steel wire that is suitable for underground use. Splices shall be accomplished utilizing a corrosion proof wire connector. The connectors shall "lock" the wires in place and contain a dielectric sealant to prevent corrosion. The connector shall be the "Snake Bite" connector manufactured by Copperhead Industries, LLC, or approved equal. The wire shall be buried continuously along the pipe. The wire shall be secured into valve boxes such that a direct/conductive metal detector may be used to trace the pipe location. Bolts shall be used to secure the wire and the attachment location shall be readily available from finished grade without special equipment.

POLYETHYLENE PLASTIC WATER TUBING

Polyethylene (PE) plastic water tubing shall be installed in accordance with PWC standard details. All services installed in new construction shall be one continuous run of pipe with no splices from the corporation stop to the meter. The PE water tubing shall meet the requirements of ASTM D2737, AWWA C901, and NSF Standards 14 and 61. Pipe dimensions shall meet Iron Pipe Size (IPS) standards.

The PE tubing material shall be high density polyethylene conforming to the minimum requirements of cell classification 445574E, as defined and described in ASTM D3350. The resin shall have a material designation code of PE4710 by the Plastic Pipe Institute.

The PE water tubing shall be SIDR 7, with a minimum pressure rating of 250 psi. Fittings for the PE water pipe shall be cast brass compression fittings, made to the PE water pipe dimension. All brass fittings shall have a 300 psi minimum pressure rating.

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For the purpose of locating plastic water services during trenching, a continuous tracing wire shall be installed. The wire shall be a minimum 12 gauge, single strand, coated copper or copper clad steel wire that is suitable for underground use. The wire shall be buried along the water service lateral from the main to the meter box. The wire shall extend a minimum of 12 inches into the meter boxes.

COPPER WATER TUBING

Copper water tubing shall be installed in accordance with PWC standards. All services installed shall be one continuous run of pipe with no splices from the corporation stop to the meter.

Copper water tubing shall be Type K, soft copper manufactured in accordance with ASTM B88. The minimum pressure rating for the copper water pipe shall be 655 psi. Fittings for the copper water pipe shall be brass compression fittings, made to the copper water pipe dimensions. All brass fittings shall have a 300 psi minimum pressure rating.

TAPPING SLEEVES

Tapping sleeves shall be ductile iron mechanical joint or stainless steel and have a minimum working pressure of 150 psi for all tapping of mains up to and including 24-inch diameter with a branch less than or equal to 12-inches diameter. Branch diameter greater than 12-inches on a 16-inch diameter pipe and larger shall require full body ductile iron mechanical joint tapping sleeve.

Ductile iron mechanical joint tapping sleeves shall be as manufactured by Clow, M&H, Mueller, American, or an approved equal and shall be furnished with complete joint accessories. The mechanical joint sleeve shall be compatible with type and class of pipe being tapped. The outlet flange shall be class 125 per ANSI B16.1 compatible with approved tapping valves.

Stainless steel tapping sleeves shall be as manufactured by Romac, Smith-Blair, or approved equal, and shall be furnished with all accessories. The sleeve, lugs, bolts and nuts shall be 18-8 type 304 stainless steel, as provided by the manufacturer. The outlet flange shall be ductile iron or stainless steel. The gasket shall be a grid pattern design and shall provide full circumferential sealing around pipe to be tapped. The sleeve shall include a 3/4 NPT test plug. All welds shall be passivated. The outlet flange shall be class D per AWWA C-207-ANSI 150 lb. drilling compatible with approved tapping sleeves.

The tapping sleeve and valve shall be in accordance with PWC standard details.

All tapping sleeves shall be hydrostatically pressure tested prior to the tap being accomplished. **Use of air to complete the pressure test is not acceptable.** The tapping sleeve shall be tested to 150 psi. The PWC Project Coordinator shall witness and approve the testing.

WATER SERVICE SADDLES

All water service saddles for use on two (2) inch PVC shall be one (1) inch brass saddles as manufactured by Ford, McDonald, or Mueller.

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Water service saddles for one (1) and two (2) inch taps on four (4), six (6), eight (8), 12-inch and larger size PVC and asbestos-cement (AC) and also four (4) inch and larger size iron pipe shall be ductile iron with stainless steel strap(s), bolts, nuts and washers. Ford Models FS 101, FS 202; Romac Models 101S, 202S; or Smith-Blair Model 315.317 shall be used. Stainless steel straps must be pre-formed at the factory to the specified outside diameters of the pipe.

Water service saddles with a two (2) inch outlet shall be double strap.

Water service saddles for pipe sizes 12-inch through 24-inch shall be double strap.

Water service saddles for pipe sizes exceeding 24-inches shall be as specified by the PWC Water Resources Engineering Department.

INSTALLATION

GENERAL

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

PIPE INSTALLATION

Pipe installation shall be in accordance with the manufacturer's instructions. All pipes and fittings shall be handled to prevent damage to the protective coatings and linings.

All dust, dirt, oil, tar, or other foreign matter shall be cleaned from the jointing surfaces, and shall be lubricated with lubricant recommended by the manufacturer.

All pipe shall be installed in accordance with the approved drawings and cut sheets, unless otherwise directed by PWC.

All dead ends on new mains shall have a two (2) inch blow-off assembly as indicated on the approved drawings. The blow-off assembly shall be in accordance with PWC standard details.

For pipe sizes up to 12-inches, mechanical equipment should not be utilized to assemble the pipe. For pipe sizes over 12-inches, mechanical equipment may be utilized, 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.

When pipe installation 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 present, the plug shall remain in place until the water is lowered to a level that allows for proper installation. 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

The Contractor shall be responsible for installing the pipe and appurtenances to proper line and grade.

All ductile iron pipe and fittings shall be installed in accordance with ANSI/AWWA C-110/A21.10. All C-900 pipe shall be installed in accordance with ASTM D-2774. The amount of deflection in the PVC or ductile iron pipe shall not exceed the applicable AWWA standards and the manufacturer's recommendations. If the required deflection exceeds the specified limitations or as determined by the Public Works Commission, mechanical joint bends shall be utilized.

Pipe passing through walls of NCDOT bridges, retaining walls, and other concrete structures shall be factory restrained joint ductile iron and be installed in casings/sleeves in accordance with NCDOT specifications. Annular space between walls and sleeves shall be filled with an approved cement mortar that meets NCDOT specifications. The annular space between the sleeve and the pipe shall be filled with an approved mastic.

Pipe passing through the walls of meter vaults, valve pits, and storm drainage structures shall be restrained joint ductile iron, as specified by PWC. Pipe shall be installed in a casing/sleeve if determined to be necessary. Annular space between walls and sleeves shall be filled with an approved cement mortar. Annular space between pipe and sleeves shall be filled with an approved mastic. Proposed conflict boxes with storm and water shall be reviewed by the PWC Water Resources Engineer and approved on a case by case basis.

All ductile iron pipe (regardless of diameter) within casings shall be factory restrained, in accordance with these specifications and the applicable PWC standard details. The use of mechanical restraints (i.e., mega-lugs, grip-rings, etc.) shall not be utilized on pipe within casings.

When pipe is field cut, the cut end shall be smooth and at right angles to the axis of the pipe. All sharp edges shall be removed. All field cut pipe shall be beveled. The beveled end of PVC pipe shall be removed, when installing into mechanical joint ductile iron fittings.

When connecting unlike (class, material, etc.) pipe, an approved PWC fitting shall be used. All pipe shall be installed in accordance with AWWA C-600 or C-605 as applicable, for buried lines and the manufacturer's recommendations. For mechanical joint pipe and fittings, all nuts shall be torqued to the manufacturer's recommendations.

Concrete thrust blocking shall be utilized on all PVC water mains. The concrete thrust blocking shall be in accordance with PWC standard details. When thrust blocking is to be utilized, backfilling shall not occur until the concrete has time to set. No hydrostatic pressure testing shall occur until the concrete thrust blocking has cured for a minimum of five (5) calendar days.

FIRE HYDRANTS

Fire hydrants shall be installed as shown on the approved drawings. Each fire hydrant shall be connected to the main with a six (6) inch branch line and shall have a minimum of 42-inches of cover. Fittings between the valve and fire hydrant may be utilized, with prior approval from PWC. The valve shall be located at the main unless otherwise approved by PWC. Hydrants shall be set plumb with pumper nozzle facing the roadway. The hydrant branch shall not be backfilled until inspected and approved by the PWC Project Coordinator. Fire hydrants shall be installed in accordance with PWC standard details.

HYDROSTATIC TESTS

All mains and laterals shall be subjected to a hydrostatic pressure test. Each valved section maybe tested individually.

The Contractor shall furnish all labor and material, including test pumps, taps, and corporations, necessary to complete the work. Any taps which are not to be utilized shall be killed out at the main. If any taps are to be used for irrigation laterals they shall be installed in accordance with PWC standard details. A PWC Project Coordinator shall be present and observe all valve operation by the Contractor. Under no circumstances shall a Contractor operate any PWC-owned valves unless it is an emergency.

The duration of the pressure test shall be at least one hour or longer, as directed by the PWC Project Coordinator. The hydrostatic pressure shall be 200 psi. The pipe to be tested shall be slowly filled with water and the specified test pressure shall be applied. Before applying the specified test pressure, all air shall be expelled from the pipe. If hydrants or blow offs are not located to properly expel the air, taps shall be made as approved by PWC.

Damaged or defective materials discovered as a result of the pressure test shall be removed and replaced with new material, and the test shall be repeated until the test results are satisfactory to the Public Works Commission.

All replacement, repair or retesting shall be accomplished by the Contractor at no additional cost to the Public Works Commission. All repairs shall be reviewed and approved by PWC prior to backfill. The use of couplings, fittings, sleeves, etc. shall be reviewed and approved by PWC prior to use. The main must successfully pass the hydrostatic test prior to sterilization.

STERILIZATION

Sterilization shall be in accordance with the requirements of NCDEQ, the North Carolina Rules Governing Public Water Supply, AWWA C651, and AWWA C655 (most recent editions). The Contractor shall furnish all chlorinating equipment, sterilization solution, materials, excavation, barricades, backfilling, and any taps and corporations necessary to complete the work. The Contractor shall fully cooperate with the PWC Project Coordinator, furnish any needed assistance, and schedule the testing.

Prior to performing the hydrostatic test, water mains, laterals, and appurtenances shall be flushed to remove air, sediment, contaminants, and/or foreign matter. After completion of a successful hydrostatic test, the water system shall be disinfected by the thorough dispersion of a chlorine solution. The chlorine level shall be between 50 parts per million (ppm) and 100 ppm throughout

the water system. In no case shall the chlorine level exceed 300 ppm. If the chlorine level is over 300 ppm, the system shall be completely flushed and re-chlorinated. **In no case shall chlorine be introduced into the water system in a dry solid state.**

The chlorine solution shall remain in contact with the interior surfaces of the water system for a minimum period of 24 hours and shall result in not less than 10 ppm of chlorine throughout the system. Then the water system shall be flushed with water from the existing PWC water system until the chlorine solution is dispelled. The Contractor shall take all necessary measures to prevent downstream erosion caused by flushing the lines. All erosion/damages shall be repaired at no additional expense to the Public Works Commission. All environmental regulations governing the release and/or disposal of chlorinated testing water shall be met by the Contractor. AWWA C655 defines "highly chlorinated" water as water having more than four (4) ppm. Any water with a chlorine level greater than four (4) ppm shall be de-chlorinated by the Contractor prior to being released to the environment.

If any disruption to the disinfection process occurs, or if any repair procedure is necessary then the disinfection process shall start over.

After disinfection, the water supply shall not be accepted or placed into service until bacteriological tests results or representative water samples analyzed in the Public Works Commission's laboratory are found to be satisfactory. The disinfection shall be repeated until tests indicate the absence of pollution for at least two (2) full days. The PWC Project Coordinator shall be responsible for taking the sample(s) and transporting them to the PWC laboratory.

If the initial sample taken after disinfection and flushing does not indicate that the water main is sterilized, the Contractor shall, in conjunction with the PWC Project Coordinator, flush the lines. Once flushing is complete, another sample will be taken to the Public Works Commission's laboratory for analysis. Should this second sample also fail to indicate that the main is sterilized; the Contractor shall repeat the disinfection process. This process shall be repeated until the samples are satisfactory. The Contractor shall fully cooperate with the PWC Project Coordinator, furnish any needed assistance, and schedule the testing.

END OF SECTION

**DIVISION 2
SITE WORK
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

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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.

END OF SECTION

**DIVISION 2
SITE WORK
02931 - SOD**

GENERAL

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

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

MATERIAL

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

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

SOIL BED PREPARATION

Before landscape construction is to begin, the site shall be cleaned and disposed of brush, rubbish, stones, gravel and other foreign material within the area to be landscaped. Exposed ground surfaces disturbed during construction activities shall be graded to the original contours

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

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

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

PLACING SOD

The Contractor and his landscape subcontractor shall coordinate the placing of the sod to begin within 24 hours after the topsoil base preparation is completed and accepted by the Public Works Commission. Sod shall be brought to the site as near to the time of placing as possible. Store sod in the shade, and keep watered particularly in extreme hot and dry condition to insure vitality and to prevent the dropping off of soil during handling. During wet weather, the sod shall be allowed to dry sufficiently to prevent tearing. Handling shall be done in a manner which will prevent tearing, breaking, drying or other damage. Carefully place sod in rows with the longer side perpendicular to slopes and the ends staggered in each successive row in a brick-like pattern. Butt the ends and sides together tightly and do not overlap or stretch the sod. Do not leave any voids or gaps. Unavoidable gaps shall be closed with small pieces of torn or broken sod if kept moist and approved by the Public Works Commission. After the sod is laid, irrigate thoroughly to allow water to penetrate a minimum six (6) inches into the soil below the sod. Sod shall not be placed when the atmospheric temperature is below 32oF.

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

MAINTENANCE

The Contractor shall, at no additional cost to the Public Works Commission, make whatever arrangements necessary to supply water of suitable quality and purity to sustain and encourage vigorous plant growth, and supply all equipment for proper delivery and application to planted areas. Water obtained from a PWC fire hydrant shall be metered and properly protected with an approved backflow prevention device. PWC must inspect and 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 Public Works Commission. Limit watering to early morning or late afternoon to enable to soil the absorb maximum amount of water.

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

Watering

- Water lawn areas once a day with a minimum $\frac{1}{2}$ inch water for the first three (3) weeks after area sodded.
- After the three (3) week period, water twice a week with a $\frac{3}{4}$ inch of water each time unless a comparable amount of rainfall has occurred.
- Make weekly inspections to determine moisture content of soil and supplement the above watering schedule as needed.
- Excessive runoff puddling and wilting shall be prevented.

Fertilizer and Pest Control

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

Mowing

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

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

ACCEPTANCE

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

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

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

GUARANTEE

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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.

END OF SECTION

**DIVISION 2
SITE WORK
02933 - LAWNS AND GRASSES (SEEDING)**

GENERAL

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

PREPARATION OF THE SOIL

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

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

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

SEED MIXTURE AND SOWING THE SEED

Seed shall be seed certified to be the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages of mixtures and pure live seed. The producer's seed label shall indicate it the minimum percent of pure live seed (which

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shall be 82.45 for Bermuda, 88 for Rye Grain), the minimum percent of germination in hard seed and maximum percent of weed seed (no more than 1 percent for Bermuda, 0.5 percent for Rye Grain). Seed shall be labeled in conformance with U.S. Department of Agriculture rules and regulations under the Federal Seed Act and applicable State seed laws. Seed that has become wet, moldy, or otherwise damaged will not be acceptable.

The following seed mixture shall be used:

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

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

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

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

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

SPECIAL CONSIDERATIONS

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

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

MAINTENANCE

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

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

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

ACCEPTANCE

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

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

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

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

GUARANTEE

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

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.

END OF SECTION

**DIVISION 2
SITE WORK
02934 - SEEDING WETLANDS**

GENERAL

All exposed ground surfaces that have been disturbed during construction shall be graded to original contours, reasonably smooth, and free of trash and debris. Grassing shall be accomplished as soon as practicable after sections of work are completed. Seeding shall be performed by an experienced subcontractor specializing in this type of operation, unless otherwise approved by the Engineer in writing. Disturbed sections shall not exceed one half mile, without prior approval by the Engineer. Grassing shall be in accordance with the following specifications:

PREPARATION OF THE SOIL

The topsoil shall be loosened and mixed to the depth of 4" to 8". Suitable equipment meeting the approval of the Engineer shall be used. The soil shall be free of clay lumps, brush, weeds, stones, roots, stumps or any other substance that might inhibit plant growth. Assistance of the local agricultural agent is recommended.

Provide agricultural lime at rate required to bring soil acidity to slightly acid - ph 6, according to soil test report.

Lime and fertilizer shall be applied uniformly and mixed with the soil during seedbed preparation. Apply 10-20-10 commercial fertilizers at the rate of 20-lbs./1000 s.f. for warm season mix and 10-20-10 commercial fertilizer at a rate of 20 lbs./1000 s.f. for cool season mix.

Apply 10-10-10 commercial fertilizers at the rate of 20-lbs./1000 s.f. for temporary cover crops. In addition, provide 15-lbs./1000 s.f. of superphosphate.

The following is for the warm season mix:

- a. All warm grass seed shall be debarbed or conditioned by brushing to create a product nearly the same as debarbing. This does not apply to Switchgrass.
- b. Disk two times to break-up crop residue and dirt clods prior to seeding.
- c. Pack soil to create a firm seedbed with a cultipacker or roller.
- d. If a rain shower should fall after the seedbed is prepared but before planting break-up any crust formation.
- e. Seeding shall be installed to a depth of 1/4" utilizing a rangeland drill or conventional grass drills. It is extremely important that seed not be planted deeper than 1/2" depth. Do not disc or harrow after seeding. This will put the seed too deep. A Brillion seeder will be acceptable.

The following seed mixture shall be used:

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

Dates	Types	Rate
April 1 - July 15	Warm Season Mix Switchgrass, Cave-in-rock, Alamo Smartweed; and Japanese Millet or Sorghum Sudan Grass Hybrids (Mow prior to maturity)	8 pls #/acre or 4 oz./1000 s.f. 2 bulk #/acre or 1 oz./1000 s.f. 20-lb/acre or ½ lbs/1000 s.f.
July 16 - Sept 1	Temporary crop of Japanese Millet or Sorghum Sudan Grass Hybrids (To be followed by permanent mixture)	20-lb/acre or ½ lbs/1000 s.f.
Sept 2 - Nov 1	Cool Season Mix Reed Canary Grass	12 bulk #/acre or 6 oz./1000 s.f.
	Smartweed	2 bulk #/acre or 1 oz./1000 s.f.
Nov 2 - March 31	Temporary Crop of Wheat (To be followed by permanent mixture)	40 lbs/acre

All highway rights-of-way, and private yards disturbed shall also be re-seeded or sodded 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 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 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 75 pounds to 100-lbs./1000 s.f. of clean wheat straw, spread uniformly, approximately 1/4 of ground should be visible to avoid smothering seedlings. If hydro-seeded, use virgin paper mulch only. The Contractor shall take sufficient precautions to prevent mulch from entering drainage structures through displacement by wind; water or other causes and promptly remove any blockage, which may occur.

MAINTENANCE AND GUARANTEE

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.

Maintain seeded areas by watering, fertilizing, mowing, weeding, and other operations such as

rolling, regrading, replanting, aerating, mulching as required to establish an acceptable lawn free of eroded or bare areas.

ACCEPTANCE

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 seeded area.

END OF SECTION

**DIVISION 2
SITE WORK
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

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

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 ensure 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 $\frac{1}{4}$ 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

BUCKHEAD SUBDIVISION WATER MAIN LOOPING

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.

END OF SECTION

**DIVISION 2
SITE WORK**

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
- B. 02732 – Sewage Force Mains

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 ofr 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, Public Works Commission standard specification 02732 – Sewage Force Mains, 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., Permox-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:

A. 20% Sulfuric Acid at 77° F	B. 2 years, no effect
C. 25% Sodium Hydroxide at 140° F	D. 2 years, no effect
E. 5% Sodium Chloride at 77° F	F. 2 years, no effect
G. Distilled Water at 160° F	H. 2 years, no effect

- I. Salt Spray (ASTM B 117) – No blistering, cracking, rusting, or delamination of film. No
-
- BUCKHEAD SUBDIVISION WATER MAIN LOOPING

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, 02732 – Sewage Force Mains, and these Contract Documents.

END OF SECTION

SECTION D – TECHNICAL SPECIFICATIONS

APPENDICES



DARSWEIL L. ROGERS, COMMISSIONER
WADE R. FOWLER, JR., COMMISSIONER
EVELYN O. SHAW, COMMISSIONER
RONNA ROWE GARRETT, COMMISSIONER
ELAINA L. BALL, CEO/GENERAL MANAGER

FAYETTEVILLE PUBLIC WORKS COMMISSION
955 OLD WILMINGTON RD
P.O. BOX 1089
FAYETTEVILLE, NORTH CAROLINA 28302-1089
TELEPHONE (910) 483-1401
WWW.FAYPWC.COM

July 8, 2021

Misty M. Manning
Fayetteville Public Works Commission
955 Old Wilmington Rd
Fayetteville, NC 28301

Re Engineering Plans and Specifications Approval
Water Main Extension
City of Fayetteville Water System to serve
Buckhead / Ferncreek Dr Waterline Looping
Cumberland County
Permit # PWC2021-W023

Dear Mrs. Manning:

Enclosed please find one copy of the "Application for Approval" together with one copy of the referenced engineering plans and specifications bearing the Public Works Commission stamp of approval and signature of the signing Authority for the referenced project. These engineering plans and specifications are approved.

You are hereby issued a permit for the installation of approximately **381 LF of 8- Inch waterline and up to 5 LF of 12- Inch waterline, for Buckhead / Ferncreek Dr Waterline Looping located in Cumberland County** as outlined in the engineering plans and specifications prepared by **Courtney M. Gamble, PE.**

This permit is valid for 24 months from the date of issuance, or until revoked and shall be subject to the conditions and limitations as specified herein. The permit may be extended if the Rules Governing Public Works Commission Local Water Supply Ordinance and site conditions have not changed. The enclosed "Authorization to Construct" certificate shall be posted at the primary entrance of the job site throughout construction of this project.

Approval must be secured from the Public Works Commission before any construction or installation

- Deviation from the approved engineering plans and specifications is necessary; or
- There are changes in site conditions affecting capacity, hydraulic conditions, operating units, the function of the water treatment processes, the quality of water to be delivered, or conditions imposed by the Public Works Commission in any approval letters.

Upon completion of the construction or modification and in accordance with Rule .0303, the applicant shall submit a certification statement signed and sealed by a registered professional engineer stating that construction was completed in accordance with approved engineering plans and specifications, including any provisions stipulated in this letter. Prior to Final Approval, the applicant shall submit a signed certification stating that the requirements in 15A NCAC 18C .0307 (d) and (e) have been satisfied and if applicable, a completed application for an operating permit and fee. Once the certification statements and operating permit application and fee, if applicable, are received and determined adequate, the Public Works Commission will grant Final Approval in accordance with Rule .0309 (a). Therefore, no

construction, alteration, or expansion of the water system shall be placed into service until the Public Works Commission has issued Final Approval.

Prior to receiving any water meters for use on the above referenced project, PWC must have received and approved:

- The Engineer's Certification;**
- As Built Drawings;**
- The PWC project coordinator's final inspection report;**
- The developer's "Statement of Total Project Cost" summary; (The developer's "Statement of Total Project Cost" summary can be found as an exhibit in the Utility Extension Agreement with PWC.);**

If we can be of further assistance, please contact Mr. John Allen at (910) 223-4734.

Sincerely,
PUBLIC WORKS COMMISSION



Misty Manning, P.E.
Water Resources Engineer/Manager

Enclosures:

DWS-15358

cc: **Courtney M. Gamble, P.E.**
Project file



FAYETTEVILLE PUBLIC WORKS COMMISSION
WATER RESOURCES ENGINEERING DEPARTMENT

APPLICATION FOR WATER SUPPLY SYSTEM EXTENSION

PWC Permit # PWC 2021-W023

To: Fayetteville Public Works Commission

Misty Manning, P.E.

(name of board, or council, authorized official and title, or owner)

of Fayetteville Public Works Commission

(name of city, town, corporation, sanitary district, water company or other)

in the County of Cumberland, State of North Carolina authorized by law to act for

the said Fayetteville Public Works Commission

(name of city, town, corporation, sanitary district, water company or other)

and to expend its funds for the water project described below, wherewith submit for the counsel and advice of the Public

Works Commission plans and specifications prepared by Courtney M. Gamble, PE

(engineer or firm)

of The Wooten Company for the installation or construction of

approximately 381 linear feet of 8-inch waterline and up to 5 linear feet of 12-inch waterline

(describe project)

Buckhead / Ferncreek Dr Waterline Looping

(location of project)

in Cumberland and make application to the Public Works Commission for

(county)

the approval of said plans and specifications as related to public health and protection of public water supplies and public water systems.

These plans have been approved and accepted by the Public Works Commission.

This application is made under and in full accord with the provisions of Chapter 130A-317 of the North Carolina General Statutes, and such other statutes as related to public water systems. The applicant agrees that no change or deviation from the engineering plans and specifications approved by Public Works Commission will be made except as allowed by T15A: 18C.0306 or with the written consent and approval of Public Works Commission or its authorized representative. The applicant agrees that a professional engineer licensed to practice in the State of North Carolina shall submit a statement reflecting that adequate observations during and upon completion of construction, by the engineer or by a representative of the engineers office who is under the engineers supervision, indicates that construction was completed in accordance with approved plans and specifications.

Remarks:

Misty Manning
(Signature of Applicant)

Misty M. Manning, P.E.

(Type or Print Name Signed Above)

(Street or Box Number)

City State Zip

Status of Water System Management Plan (WSMP)

Check one of the following, and if applicable, provide the required information:

- Not Applicable (For "Unregulated" Public Water Systems that meet all criteria of the NC General Statutes 130A-314)
- The WSMP for the project, as defined in the attached engineering plans and specifications, is submitted with this application.
- The WSMP that includes this project, as defined in the attached engineering plans and specifications, was previously submitted.

Provide the Following:

Water System Name: City of Fayetteville

Owner Name: Public Works Commission

PWS I.D. No: 03-26-010

WSMP No: 12-00243

WSMP Submittal Date: March 14, 2012

County: Cumberland

By my signature below, I certify that the previously submitted WSMP contains the information required by Rule .0307 (c) for the project defined in the attached engineering plans and specifications.

NAME Misty M. Manning, P.E. TITLE PWC Water Resources Engineering Manager
 (Type or Print Name)

SIGNATURE *Misty Manning* DATE 7/8/2021

- The WSMP for the project, as defined in the attached engineering plans and specifications, has not been submitted.
Note: When the WSMP is submitted, the applicant must clearly identify the previously submitted project engineering plans and specifications for which the WSMP was prepared.

Status of Engineer's Report

Check one of the following, and if applicable, provide the required information:

- The Engineer's Report for the project, as defined in the attached engineering plans and specifications, is submitted with this application.
- The Engineer's Report that includes this project, as defined in the attached engineering plans and specifications, was previously submitted.

Provide the Following:

Water System Name: _____

Owner Name: _____

PWS I.D. No: _____

Engineer's Report No: _____

Engineer's Report Title: _____

Engineer's Report Submittal Date: _____

County: _____

Note: If the previously submitted Engineer's Report covered multiple projects, then attach to this Application, a letter from the engineer stating that the previously submitted Engineer's Report contains the information required by Rule .0307 (b) for the project defined in the attached engineering plans and specifications.

These plans and specifications cited in the foregoing application are approved insofar as the protection of public health is concerned as provided in the rules, standards and criteria adopted under the authority of Chapter 130A-317 of the General Statutes, with the following provisions:

This approval is given with the understanding that upon installation of such works, its operation shall be placed under the care of a competent person, and the operation shall be carried out according to best accepted practice and in accordance with the recommendations of the Public Works Commission.

The official copies of plans and specifications accompanying this application have been sealed and stamped with the serial number of this application PWC 2021-10023. Only such plans and specifications are included in this approval and any erasures, additions or alterations of the proposed improvements except those permitted will make such approval null and void.

Signed: Misty Manning
(Signature of PWC Engineering Manager)



**PUBLIC WORKS COMMISSION TEMPLATE
for Engineer's Report for Water Main Extensions**

Date: 6/23/2021

Project Name: Buckhead / Ferncreek Dr Waterline Looping

Water System Name: Fayetteville Public Works Commission

Water System ID: NC0326010

County of Project: Cumberland

Prepared by:

Courtney M. Gamble, PE

The Wooten Company

cgamble@thewootencompany.com

This form includes the minimum information needed for the Fayetteville Public Works Commission to review water main extension projects. Complex or unique design conditions must be addressed in a supplemental document as deemed appropriate by the design engineer.

Signature and seal of Professional Engineer that prepared this report:



I attest that this engineer's report has been prepared by me, or under my responsible charge, and is accurate, complete and consistent with the information supplied in the engineering calculations. I further attest that the proposed design has been prepared in accordance with 15A NCAC 18C. Although page 4 of this report incorporates data provided by others, inclusion of these materials under my seal signifies that I have reviewed this material and have judged it to be consistent with the proposed design.

Water Main Extension Engineer's Report Mandatory Information

To present data required by 15A NCAC 18C .0307(b)

Specific citations from 15A NCAC 18C are provided when data is required to confirm compliance with another regulation.

Applicant Information

Applicant name (must be a person): Misty Manning, PE

Applicant mailing address: 955 Old Wilmington Road

City: Fayetteville State: NC Zip: 28301

Applicant phone numbers: Business: 910-263-0438 Cell: _____

Applicant e-mail address: misty.manning@faypwc.com

Description of Proposed Project

Name of proposed project: Buckhead / Ferncreek Dr Waterline Looping

Provide a summary of the diameter, length and material of all piping proposed in the project.

Diameter of piping	Length of piping	Material
8 -inch	190 linear feet	DIP
8 -inch	191 linear feet	Fusible PVC
12 -inch	5 linear feet	DIP
-inch	linear feet	
-inch	linear feet	

Location of project: (use address if available; if address is not available use existing roads and intersections, and identify municipality).

Project begins between 4423 and 4427 Ferncreek Drive then crosses Buckhead Creek toward Ferncreek Drive near 4583 Ferncreek Dr and 505 Lost Tree Ct.

The proposed project is an expansion of the existing public water system. Yes No

The source of water for the proposed project will be provided by a separately owned public water system. Yes No

Is the project phased? Yes No

If yes, delineate all phases in plan sheets. Partial final approvals may be granted to completed phases specified in this submittal.

If yes, depending on whether the water system does or does not provide fire flow; provide calculations to demonstrate that the project can provide adequate peak demand (domestic peak demand) at the minimum required residual pressure of 30 pounds per square inch gauge (psig) or can provide peak demand with fire flow (domestic peak demand plus fire flow) at the minimum pressure of 20 psig through *each* phase of construction

<p>Check here if project is a water main replacement with no additional demands. (Water main replacement consists of like size, no additional service connections, and no additional hydrants and no added fire demand.)</p>	<p><input type="checkbox"/> If box checked, proceed to page 4</p>
--	---

Provide anticipated project flows for any project that will increase demands

Does the proposed project (as designed) include any in-ground irrigation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, attach appropriate analysis to address how the system is designed to accommodate the impact of irrigation use on treated water supply, storage needs and system pressure.	
Peak hourly demand (non-fire flow) of proposed project	_____ gpm
Maximum day demand of proposed project	_____ gpd
Average day demand of proposed project	_____ gpd
Indicate the calculated pressure at maximum non-fire flow. The pressure must be at least 30 pounds per square inch gauge. You must attach calculations or summary of model results.	_____ psig
Per Rule .0901, is the proposed project designed to carry fire protection flows for this project?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Determine minimum fire flow per North Carolina Building Code:	
Proposed Building Type per North Carolina Building Code (IA, IB, IIA, IIB, IIIA, IIIB, IV, V-A, V-B)	_____
Proposed Building Fire-Flow Calculation Area	_____ sqft
Minimum Fire Flow per North Carolina Fire Code Appendix B	_____ gpm
Minimum Fire Flow Duration	_____ hr
All fire suppression systems or appurtenances that exert a demand on proposed project must be included in calculations. Pressure must be at least 20 psig during fire flow conditions at maximum day demand.	
Flow Test Static pressure	_____ psig
Flow Test Residual pressure	_____ psig
Flow rate during fire flow test	_____ gpm
Will the building include an automatic sprinkler system	<input type="checkbox"/> Yes <input type="checkbox"/> No
Sprinkler design flow	_____ gpm
Calculated Minimum pressure during fire flow at maximum day demand. You must attach calculations or summary of model results.	_____ psig

NOTES:

1. Supporting documentation must be attached for all *calculated* values.
2. Maps displaying the locations of the field pressure and flow tests in relation to the location of the proposed project must also be attached.
3. Summary of Model results shall include
 - a. report tables for all nodes including elevation, demand, and pressure
 - b. report tables for all pipes including diameter, start and stop nodes, length, friction factors, flowrates, and head loss
 - c. report tables for pumps including pump curve, elevation, calculated flow, and calculated head
 - d. report tables for reservoirs/tanks including elevation and flow
 - e. map or schematic of model with all components clearly identified

Key:

gpm: gallons per minute
 gpd: gallons per day
 psig: pounds per square inch gauge

Water System-Supplied Information

Information on this page must be updated on an annual basis

Data provided by: John P. Allen, P.E. (name) Date provided: December 31, 2020

Position: Senior Engineer

Number of current connections in water system	<u>90,538</u> connections
Approved number of connections in water system	<u>90,538</u> connections <input type="checkbox"/> N/A – local government system
Current average and maximum day demand of existing system Average day demand is the one day average demand for the latest calendar year.	<u>23.531</u> average MGD <u>32.555</u> maximum MGD
Current maximum daily treated water supply of existing system Maximum daily treated water supply is the maximum quantity of treated water that can be produced and/or purchased by the system.	<u>50.0</u> maximum MGD
Total elevated storage capacity of existing system	<u>5.0 M</u> gallons
Total ground storage capacity of existing system	<u>31.50 M</u> gallons
Total hydropneumatic storage capacity of existing system	<u>N/A</u> gallons
Contractual storage with other system(s) Attach a copy of the agreement with the providing system	<u>N/A</u> gallons
Systems > 300 connections or systems < 300 connections without hydropneumatic storage:	
• Total storage volume is at least half the average annual daily demand (Rule .0805(c))	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
• Has elevated storage or meets high yield aquifer criteria (Rule.0405(d))	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
• For municipalities, at least 75,000 gallons elevated storage and at least half the average day demand combined elevated and ground finished water storage (Rule .0805(b))	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Systems with hydropneumatic storage tanks up to 300 connections:	
• Volume of hydropneumatic storage tank is sufficient to meet peak demands based on Rule .0802 and calculations in Appendix B, Figure 6	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• For residential community systems, volume of hydropneumatic storage tank is at least 40 times the number of connections or 500 gallons, whichever is greater (Rule .0803)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• For mobile home park systems, volume of hydropneumatic storage tank is at least 25 times the number of connections or 500 gallons, whichever is greater (Rule .0803)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
• For campground systems, volume of hydropneumatic storage tank is at least 10 times the number of connections or 500 gallons, whichever is greater (Rule .0803)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Water Main Extension Engineer's Report Mandatory Information

To present data required by 15A NCAC 18C .0307(b)

Specific citations from 15A NCAC 18C are provided when data is required to confirm compliance with another regulation.

Applicant Information

Applicant name (must be a person): Misty Manning, PE

Applicant mailing address: 955 Old Wilmington Road

City: Fayetteville

State: NC

Zip: 28301

Applicant phone numbers: Business: 910-263-0438

Cell: _____

Applicant e-mail address: misty.manning@faypwc.com

Description of Proposed Project

Name of proposed project: Buckhead / Ferncreek Dr Waterline Looping

Provide a summary of the diameter, length and material of all piping proposed in the project.

ALTERNATE DESIGN

Diameter of piping	Length of piping	Material
* 8 -inch	142 linear feet	DIP
* 10 -inch	240 linear feet	HDPE
12 -inch	5 linear feet	DIP
-inch	linear feet	
-inch	linear feet	

Location of project: (use address if available; if address is not available use existing roads and intersections, and identify municipality).

Project begins between 4423 and 4427 Ferncreek Drive then crosses Buckhead Creek toward Ferncreek Drive near 4583 Ferncreek Dr and 505 Lost Tree Ct.

The proposed project is an expansion of the existing public water system. Yes No

The source of water for the proposed project will be provided by a separately owned public water system. Yes No

Is the project phased?

Yes No

If yes, delineate all phases in plan sheets. Partial final approvals may be granted to completed phases specified in this submittal.

If yes, depending on whether the water system does or does not provide fire flow; provide calculations to demonstrate that the project can provide adequate peak demand (domestic peak demand) at the minimum required residual pressure of 30 pounds per square inch gauge (psig) or can provide peak demand with fire flow (domestic peak demand plus fire flow) at the minimum pressure of 20 psig through *each* phase of construction

Check here if project is a water main replacement with no additional demands.
(Water main replacement consists of like size, no additional service connections, and no additional hydrants and no added fire demand.)

If box checked, proceed to page 4



SUBMITTAL CHECKLIST

PROJECT NAME: Buckhead / Ferncreek Dr Waterline Looping

Date: 6/23/2021

Property Location (vicinity) Beginning at 4423 Ferncreek Drive, crossing Buckhead Creek and connection near 505 Lost Tree Ct.

PIN(s): 0417-44-1903-204; 0417-44-2511; 0417-34-9858; 0417-45-0230

Developer

Business Name: Fayetteville Public Works Commission

Address: 955 Old Wilmington Road, Fayetteville, NC 28301

Phone: 910-263-4730

Authorized Signatory: Misty Manning, PE

Title: PWC Water Resources Engineering Manager

Phone: 910-263-0483

E-mail: misty.manning@faypwc.com

Design Engineer

Name: Courtney M. Gamble, P.E.

Firm: The Wooten Company

Phone: 919-828-0531

E-mail: cgamble@thewootencompany.com

INSTRUCTIONS: The Design Engineer shall indicate that the required items have been included with this submittal package by marking the appropriate box next to each item.

Items in Section I are required for all submittals. Items in Section II and Section III are applicable only to projects that include main extensions. If this project does not include water main extensions or sewer main extensions, the Design Engineer shall mark the box indicating "Not Applicable to this Project" in Section II and/or Section III as appropriate.

Failure to submit all required items, and errors or omissions in any item in this submittal package, will result in the application being returned as incomplete and/or additional processing and review time.

Signature of Design Engineer:

Date:

6/23/21

I. Requirements for All Submittals

All construction plans submitted for review and approval shall be signed and sealed by the Design Engineer and shall be prepared in compliance with PWC's standard guidelines, details, specifications, and all other applicable statutes as related.

If the project includes water main or sewer main extensions, the Design Engineer shall submit five (5) full sets of plans (signed and sealed for construction) for permit processing.

If the project does not include water main or sewer main extensions, the Design Engineer shall submit one (1) full set of plans (signed and sealed for construction) for "Taps Only" approval.

- A. Included **PWC Standard Specifications Checklist** – In lieu of submitting a specification book, the Project Engineer shall submit a signed and sealed original of the PWC Standard Specifications Checklist Form. The Form shall indicate which specifications will be incorporated into the Project and which specification are not applicable. A response shall be provided to each item on this list.

If the project will incorporate any special provisions or additional specifications, the Project Engineer shall indicate so on the form, and shall submit the signed and sealed special provisions and/or additional specifications.

- B. Included **Annexation Petition** – If the project is with the Municipal Influence Area of the City of Fayetteville or the Town of Hope Mills, submit a copy of the petition for annexation.
 N/A

- C. Included **Encroachment Map(s)** – If this project will encroach upon the lands or rights-of-way of any gas utility, electric utility, railroad, or NCDOT, submit an Encroachment Map prepared in compliance with PWC guidelines and the requirements set forth by the applicable entity.
 N/A

Encroachment Maps shall be drawn on legal size (8½" x 14") sheets unless otherwise directed by PWC staff.

- D. Included **Maps and Descriptions for Off-Site Utility Easement(s)** – If this Project involves the installation of any water or sewer mains on private property, other than that owned by the Developer of this Project, and where said mains are to be installed in areas not intended to be dedicated as public right-of-way, submit a Utility Easement Map and a legal description of the easement in Microsoft Word format.
 N/A

The Utility Easement Map shall be signed and sealed by a North Carolina Professional Land Surveyor and shall conform to the requirements of G.S. 47-30 subsection (m).

The Utility Easement Map shall be drawn to scale on legal size (8½" x 14") sheets and shall show the exact location (via bearings and distances along easement perimeter and/or centerline with tie-downs to property corners, monuments, survey stations, etc.) and widths of all temporary and permanent utility easements.

- E. Included **Hydraulic Analysis** – If a hydraulic analysis is required for this project, the Design Engineer shall submit calculations along with any supporting charts, tables, maps, and relevant data to demonstrate that the proposed water system will provide a residual pressure of at least 20 psi while supplying a demand equal to the peak flow plus the fire flow.
 N/A

The analysis shall be based upon standard hydraulic energy balance principals and shall account for friction and minor losses. To account for degradation in the system over time, *new pipes shall have a Hazen-Williams C-factor no greater than 120*. The Design Engineer may utilize software such as EPANET, Haestad, WaterCAD, or other industry standard modeling software as approved by PWC.

II. Requirements for Water Main Extensions

Not Applicable to this Project

- A. Included **Water Permit Application Form** – Submit a completed and properly executed application form. Any errors and/or omissions in this form will result in the application being returned. The Public Works Commission Water Resources Engineering Department will only accept application packages that have been fully completed with all applicable items addressed.

For modifications to previously approved applications, clearly explain the reason for the modification. Include only the modified information in the permit application – do not duplicate project information that was included in the original permit.

- B. Included **Application Fee** – Submit a check in the amount of \$500 made payable to: "Public Works Commission".

- C. Included **Engineer's Report** – Submit one original of a completed Engineer's Report (signed & sealed), prepared in compliance with the requirements of The North Carolina Department of Environmental Quality 15A:18C.0307(b).
The Design Engineer may utilize the Engineer's Report Template form

III. Requirements for Sanitary Sewer Main Extensions

Not Applicable to this Project

- A. Included **Sewer Application Form** – Submit a completed and properly executed application form. Any errors and/or omissions in this form will result in the application being returned. The Public Works Commission Water Resources Engineering Department will only accept application packages that have been fully completed with all applicable items addressed.
- For modifications to previously approved applications, clearly explain the reason for the modification. Include only the modified information in the permit application – do not duplicate project information that was included in the original permit.
- B. Included **Application Fee** – Submit a check in the amount of **\$500** made payable to: “Public Works Commission”.
- C. Included **Location Map** – Submit an 8.5-inch by 11-inch color copy of the portion of a 7.5-minute USGS Topographic Map along with this form. The map should identify the entire project area location as well as the closest downslope surface waters as clearly as possible.
- D. Included **Certificate of Public Convenience and Necessity – (Only for systems that will be owned by a Privately Owned Public Utilities)** – Per 15A NCAC 02T .0115(a)(1) provide the Certificate of Public Convenience and Necessity from the North Carolina Utilities Commission demonstrating the Applicant is authorized to hold the utility franchise for the area to be served by the sewer extension, or Provide a letter from the North Carolina Utilities Commission’s Water and Sewer Division Public Staff stating an application for a franchise has been received and that the service area is contiguous to an existing franchised area or that franchise approval is expected.
 N/A
- E. Included **Operational Agreements – (Only for systems that will be permitted as a Privately Owned Sewer Systems)** – If the sewer will not be per 15A NCAC 02T .0115, submit a properly executed Operational Agreement
 N/A



FAYETTEVILLE PUBLIC WORKS COMMISSION
WATER RESOURCES ENGINEERING DEPARTMENT

STANDARD SPECIFICATIONS CHECKLIST

<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	02111	Site Clearing for PWC Utilities
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02211	Grading for PWC Utilities (for access roads, drainage, etc.)
<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	02222	Excavation and Backfilling for Utilities Systems
<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	02272	Erosion Control (when an approved erosion control plan does not exist)
<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	02273	Temporary Silt Fence (when an approved erosion control plan does not exist)
<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	02274	Gravel Const. Ent (when an approved erosion control plan does not exist)
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02301	Boring and Jacking
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02350	Steel "H" Piles
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02505	Adjustments of Existing Structures
<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	02573	Permanent Pavement Patch
<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	02660	Water Distribution
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02730	Sanitary Sewer System
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02732	Sewage Force Mains
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02753	Submersible Pump Lift Station
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02754	Self-Priming Lift Station
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02755	Fiberglass Reinforced Plastic (FRP) Enclosures for Lift Stations
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02756	Pre-Cast Concrete Enclosures for Lift Stations
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02831	Chain Link Fencing
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02931	Sod
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02933	Lawns and Grasses (Seeding)
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	02934	Seeding Wetlands
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	03301	Concrete Construction (Utility)
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	09800	Special Coatings – Coal Tar Epoxy Manhole Lining
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	09801	Anti-Microbial Admixture
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	09802	Special Coatings – Ceramic Epoxy
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	13446	Remote Telemetry for Lift Stations
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	16010	Electrical Systems for Lift Stations
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	16231	Standby Power Systems for Lift Stations
<input type="checkbox"/>	YES	<input checked="" type="checkbox"/>	N/A	Special Provisions to the above Specifications (Must include the signed & sealed specifications)	
<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	N/A	Additional Specifications not listed above (Must include the signed & sealed specifications)	

Project Name: Buckhead / Ferncreek Dr Waterline Looping

Engineer: Courtney M. Gamble, PE

I attest that I am incorporating the specifications as indicated above for this project. I have not altered the specifications as provided in the PWC Design Manual, unless indicated in the attached signed, sealed, and dated Special Provisions.



Seal, Signature & Date

SECTION 02447
HORIZONTAL DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 SCOPE

- A. Provide complete installation of high density polyethylene (HDPE) pressure pipe or fusible polyvinylchloride pipe (FPVC) at designated crossings by horizontal directional drilling (HDD) as indicated on the drawings.
- B. Work shall include, but not be limited, to the following:
 - 1. General site and access preparation necessary for construction operations.
 - 2. Assembly of HDPE or FPVC pipe.
 - 3. Hydrostatic testing of the pipe prior to installation (Contractor's option).
 - 4. Erection of drilling equipment.
 - 5. Drilling of a small diameter pilot hole.
 - 6. Reaming the pilot hole as specified herein to a diameter suitable for installation of the pipe.
 - 7. Pulling the assembled pipe through the reamed hole, along with the detector wire.
 - 8. Hydrostatic testing of pipe after installation.
 - 9. Cleanup and final restoration of work area.

1.02 REFERENCES

- A. Publications are referred to in the text by basic designation only.
 - 1. American Society for Testing and Materials (ASTM)
 - a. D1784 Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
 - b. D3350 Polyethylene Plastics Pipe and Fittings Materials
 - 2. American Water Works Association (AWWA)
 - a. B300 Hypochlorites
 - b. B301 Liquid Chlorine
 - c. C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
 - d. C105 Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids
 - e. C111 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
 - f. C150 Thickness Design of Ductile Iron Pipe
 - g. C151 Ductile-Iron Pipe, Centrifugally Cast, for Water
 - h. C153 Ductile-Iron Compact Fittings, 3-inch through 24-inch and 54-inch through 64-inch, for Water Service
 - i. C600 Standard for Installation of Ductile Iron Water Mains and Their Appurtenances
 - j. C651 Disinfecting Water Mains
 - k. C906 Polyethylene (PE) pressure Pipe and Fittings, 4 - 63 inch for Water Distribution and Transmission

1.03 SUBMITTALS

- A. Submit the following in accordance with Fayetteville PWC Procedures:
 - 1. Affidavit of Compliance: Affidavit shall attest that supplied products conform to the referenced standard and this specification and that all tests set forth in each

applicable referenced publication have been performed and that all test requirements have been met. Submit for each of the following materials:

- a. HDPE Pipe
 - b. FPVC Pipe
2. Catalog Data: Submit manufacturer's standard drawings or catalog cuts for the following. Clearly indicate equipment to be furnished for the Project including options to be provided.
 - a. HDPE Pipe
 - b. FPVC Pipe
 3. Test Reports: Submit for the following:
 - a. Field test including calibration report and pressure testing.
 4. Description of the arrangement of directional drilling including method of monitoring and controlling line and grade, schedule, and procedure of installation.
 5. Provide pipe manufacturer's recommended pull-back force to be utilized during installation.
 6. Log sheets as required herein.
 7. Provide certified as-built drawing (profile) upon completion of drilling.

1.04 QUALITY ASSURANCE

- A. Pipe manufacturer shall have an established quality control program responsible for inspecting and testing incoming and outgoing material.
- B. Manufacturer shall maintain permanent Quality Control (QC) and Quality Assurance records.
- C. Contractor shall employ personnel that have a minimum of ten (10) similar installations of HDPE and/or FPVC by horizontal directional drilling as appropriate for the installation.
- D. Directional drilling method shall be mechanical with fluid assistance. Pneumatic, water jetting, jacking, and boring method will not be permitted.
- E. Install HDPE pipe and FPVC pipe by directional drilling in accordance with the best industry practice, manufacturer's recommendations and the Contract Documents.
- F. Equipment used to monitor pull-back force shall be calibrated prior to each installation.

PART 2 PRODUCTS

2.01 GENERAL

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

2.02 HIGH DENSITY POLYETHYLENE (HDPE) PIPE:

- A. The pipe shall conform to AWWA C906 and the following requirements:
 1. Pipe shall be certified and listed for potable water distribution products in accordance with NSF 61 and bear the NSF seal on each section of pipe.
 2. Outside diameter shall conform with ductile-iron pipe for pipes 20-inch and smaller and iron pipe size for 24-inch and above.
 3. Material for pipe manufacturing shall be PE 4710 high density polyethylene (HDPE) with a minimum ASTM D3350 cell classification of 445574C.

4. Pipe shall be pressure class PC200 with a standard dimension ratio (DR) of 9.
5. Pipe shall be supplied with a stripe along the entire length to designate pipe use. Stripe color to as follows:
 - a. Blue – Water

2.03 FUSIBLE POLYVINYLCHLORIDE PIPE

- A. Fusible polyvinylchloride pipe shall conform to AWWA C900 and/or ASTM D2241 or ASTM D1785 for IPS standard dimensions if applicable for most pressure use, as indicated in the drawings. Testing shall be in accordance with AWWA standards for all of these pipe types.
- B. Fusible polyvinylchloride pipe may conform to ASTM D3034 or ASTM F679 for non-pressure use, as indicated in the drawings.
- C. Fusible polyvinylchloride pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
- D. Fusible polyvinylchloride pipe shall be manufactured in standard 40 foot nominal lengths, with other lengths available upon request.
- E. Fusible polyvinylchloride pipe shall be the following color.

Color	Service
Blue	Potable water

- F. Pipe generally shall be marked per industry standards, and shall include as a minimum:
 1. Nominal pipe size
 2. PVC
 3. Dimension Ratio, Standard Dimension Ratio or Schedule
 4. Pipe legend or stiffness designation, or AWWA pressure class, or standard pressure rating for non-AWWA pipe
 5. AWWA Standard designation number or pipe type for non-AWWA pipe
 6. Extrusion production-record code
 7. Trademark or trade name
 8. Cell Classification 12454 and/or PVC material code 1120 may also be included.
- G. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults.

2.04 DI/HDPE TRANSITION FITTING:

- A. If HDPE is used, the D.I./HDPE mechanical joint adaptor shall consist of a molded or fabricated HDPE mechanical joint transition fitting, rubber gasket, a mechanical joint backup drive ring and mechanical joint tee bolts. Pipe stiffeners shall be employed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel, with a wedged style design to fit the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE.

2.05 TRACER WIRE AND TEST PORTS

- A. Tracer wire shall be intended for and manufactured to withstand the rigors of directional drilling and shall be in accordance description, and installation, of

continuous "detectable" identification wire in Fayetteville PWC Master Specification, Specification 02660, Water Distribution, PVC Pipe.

PART 3 EXECUTION

3.01 GENERAL

- A. Investigate the subsurface conditions at the crossing location.
- B. Provide water for the drilling process.
- C. Handle pipe in accordance with manufacturer's recommendation.
- D. Utilize pipe rollers during layout and pull-back operations to prevent excess sagging of the pipe. Pipe rollers shall be of sufficient size to fully support the weight of the pipe while being hydro-tested before installation and during pull-back operations.
- E. Directional drilling procedure shall include provisions to guard against electrical shock such as ground mats, ground cables, hot boots and gloves. Drilling equipment shall include an alarm system capable of detecting electrical current as it nears electrical lines.
- F. Maintain log sheets for drilling fluid pressure, flow rate, drill thrust pressure, pull-back force, drill head torque and drill head location plots at 20-foot intervals.
- G. Drilling fluids shall be inert and of no risk to the environment. No fluid will be utilized that does not comply with permit requirements and environmental regulations. Drilling fluid should remain in the bore hole to increase the stability of the surrounding soil and to reduce the drag on the pulled pipe.
- H. No additional payment will be made for failed attempts.

3.02 DIRECTIONAL DRILLING

A. General

- 1. Drill pilot hole along the path shown on the Drawings to the following tolerances:
 - a. Vertical Location - Plus or minus 1 foot
 - b. Horizontal Location - Plus or minus 6 feet.
- 2. At the completion of the pilot hole drilling, provide a tabulation of coordinates referenced to the drilled entry point which accurately describes the location of the pilot hole.
- 3. For drills under non-structural conditions, perform reaming diameter to 1.25 to 1.5 times the outside diameter of the pipe being installed. Prepare pipe to facilitate connection to the remainder of the pipeline being installed.
- 4. For drills under structural conditions (i.e., roadways & retaining walls), perform reaming diameter to 2 inches maximum greater than outside diameter of the pipe being installed. If larger size is necessary, provide statement from North Carolina Professional Engineer stating that "an overbore in excess of 2-inches will arch and no damage will be done to pavement or sub-grade or retaining wall integrity".

B. Polyethylene (PE) Pressure Pipe

- 1. Joints at the ends of directionally drilled runs shall be fusion bonded to the adjacent pipe section. Mechanical couplings are not permitted. Fusion bonding may be accomplished through the use of butt fusion or electrofusion coupling techniques as specified.
- 2. Use care to protect the pipe from scarring, gouging, or excessive abrasion.

3. Method of connection between HDPE pipe and other pipe materials shall be as indicated on the Drawings
4. Pipe shall be deflected within the tolerances as provided by the pipe manufacturer.
5. Allow one week from the time of installation for pipe to be connected other piping systems to allow tensional stresses to relax.

C. Fusible Polyvinylchloride (FPVC) Pipe

1. Fusion Process:

- a. Fusible polyvinylchloride pipe shall be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.
- b. Fusible polyvinylchloride pipe shall be fused by qualified fusion technicians holding current qualification credentials for the pipe size being fused, as documented by the pipe supplier.
- c. Pipe supplier's procedures shall be followed at all times during fusion operations.
- d. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine.
- e. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. This includes requirements for safety, maintenance, and operation with minor modifications made for PVC.

2. Installation:

- a. Pull heads for use with FPVC
 - 1) Pipe pull heads shall be utilized that employ a positive through-bolt design assuring a smooth wall against the pipe cross-section at all times.
 - 2) Pipe pull heads shall be specifically designed for use with fusible polyvinylchloride pipe, and shall be as recommended by the pipe supplier.
- b. Pipe shall be fused prior to insertion into continuous length as allowed by the site conditions.
- c. Contractor shall handle the pipe in a manner that will not over-stress the pipe prior to insertion. Vertical and horizontal curves shall be limited so that the pipe does not bend past the pipe supplier's minimum allowable bend radius, buckle, or otherwise become damaged. Damaged portions of the pipe shall be removed and replaced.
- d. The pipe entry area shall be graded as needed to provide support for the pipe and to allow free movement into the bore hole.
 - 1) The pipe shall be guided into the bore hole to avoid deformation of, or damage to, the pipe.
 - 2) The fusible polyvinylchloride pipe may be continuously or partially supported on rollers or other Owner and Engineer approved friction decreasing implement during joining and insertion, as long as the pipe is not over-stressed or critically abraded prior to, or during installation.
 - 3) A swivel shall be used between the reaming head and the fusible polyvinylchloride pipe to minimize torsion stress on the pipe assembly.
- e. Buoyancy modification shall be at the sole discretion of the Contractor, and shall not exceed the pipe supplier's guidelines in regards to maximum pull force or minimum bend radius of the pipe. Damage caused by buoyancy modifications shall be the responsibility of the Contractor.

- f. Once pull-back operations have commenced, the operation shall continue without interruption until the pipe is completely pulled through the bore hole.
- g. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, or movement and distortion of surface features. Any damages caused by the Contractor's operations shall be corrected by the Contractor.

D. Tracer Wire and Test Ports

- 1. For all non-ferrous pipe, install tracer wire with the pipe when it is inserted into the borehole.
- 2. Secure tracer wire to the pipe and the pull head such that wire is installed the complete length of pipe.
- 3. Install multiple wires, if needed, to ensure a continuous, intact wire is installed with the pipe.
- 4. Install test ports to locate each end of the bore. At each test port, extend a loop of tracer wire to grade inside the box. The loop of wire inside the box shall be a minimum of three feet.
- 5. Test ports shall be located and included on record drawings.

3.03 CLEAN UP

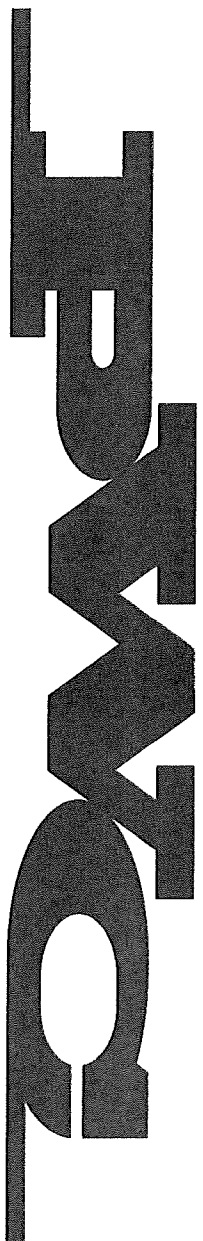
- A. Upon completion of the pipe installation, backfill the drilling pit and receiving pit, as specified.
- B. Properly remove and dispose of drilling fluid and spoil material in compliance with relative environmental regulations, right-of-way, and work space agreements under permit requirements. Drilling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

3.04 FIELD TESTS

- A. Prior to Installation, Contractor may elect, at his expense, to hydrostatically test or perform a low pressure air test on the pipe line to determine the integrity of the butt fusion joints. This shall not be considered an alternative to the testing required after installation.
- B. Following installation, test pipe in accordance with Hydrostatic Tests and Sterilization per Fayetteville PWC Master Specification, Section 02660, Water Distribution.
- C. Following pipe installation, perform conductivity test on tracer wire to ensure pipe can be field located in the future.

END OF SECTION





Authorization To Construct

Project Name: **BUCKHEAD / FERNCREEK DR WATERLINE LOOPING**

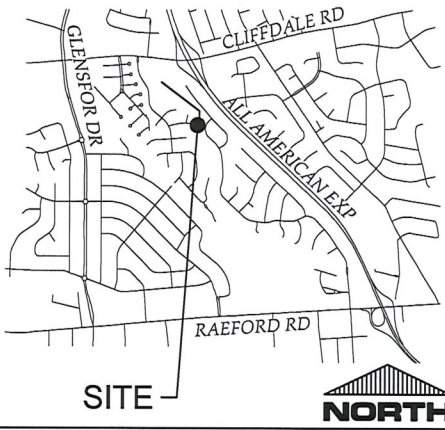
Permit Number: **PWC20201-W023**

Issued To: **FAYETTEVILLE PUBLIC WORKS COMMISSION**

Issue Date: **July 8, 2021**

Expiration Date: **July 8, 2023**

In accordance with NCAC 18C.0305, and the PWC Manual this Authorization to Construct must be posted for inspection at the primary entrance of the job site during all construction.



VICINITY MAP
(N.T.S.)

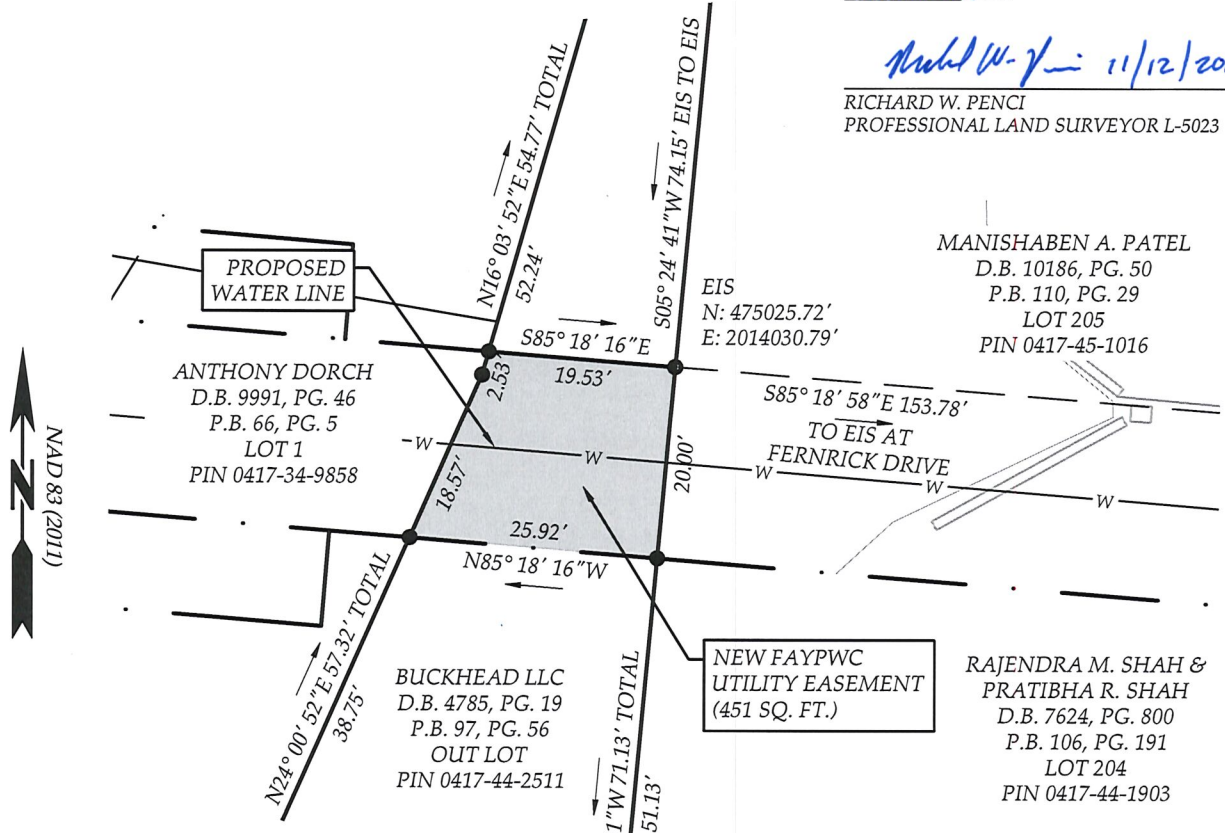


SURVEY CERTIFICATE

I, RICHARD W. PENCI, CERTIFY THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION AND IS BASED UPON REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS BEING TAKEN FROM REFERENCES SHOWN; THAT THE RATIO OF PRECISION AS CALCULATED IS GREATER THAN 1:10,000; THAT THIS MAP WAS PREPARED IN ACCORDANCE WITH G.S. 47-30(M) AS AMENDED. I FURTHER CERTIFY THAT THE SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXEMPTION OR EXCEPTION TO THE DEFINITION OF SUBDIVISION. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 12th DAY OF NOVEMBER 2019.

Richard W. PencI 11/12/2019

RICHARD W. PENCI
PROFESSIONAL LAND SURVEYOR L-5023



MANISHABEN A. PATEL
D.B. 10186, PG. 50
P.B. 110, PG. 29
LOT 205
PIN 0417-45-1016

RAJENDRA M. SHAH &
PRATIBHA R. SHAH
D.B. 7624, PG. 800
P.B. 106, PG. 191
LOT 204
PIN 0417-44-1903

SURVEY NOTES

- DISTANCES SHOWN HEREON ARE HORIZONTAL GROUND MEASUREMENTS, IN US SURVEY FEET, UNLESS STATED OTHERWISE.
- BEARINGS ARE BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM (NAD83/2011).
- COORDINATES SHOWN ARE GROUND COORDINATES LOCALIZED AT A STRATEGIC POINT HAVING NC GRID COORDINATES OF NORTH: 475,100.0', EAST: 2,014,100.0', ELEVATION: 200.0' AND A COMBINED SCALE FACTOR (GRID TO GROUND) = 1.0001259253.
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- THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO MATTERS A FULL TITLE SEARCH WOULD DISCLOSE.
- THE PROPERTIES SHOWN HEREON DO NOT LIE WITHIN A SPECIAL FLOOD HAZARD AREA AS REFERENCED BY FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 3720041700J, EFFECTIVE DATE JANUARY 5, 2007.

LEGEND

- SURVEYED PROPERTY LINE
- PROPERTY LINE FROM RECORD
- EASEMENT LINE
- EIP EXISTING IRON PIPE
- EIS EXISTING IRON STAKE (REBAR)
- COMPUTED POINT
- NEW FAYPWC UTILITY EASEMENT
- PIN PARCEL IDENTIFICATION NUMBER (GIS)
- D.B. DEED BOOK
- PG. PAGE
- P.B. PLAT BOOK

**BUCKHEAD SUBDIVISION
WATERLINE EXTENSION
EXHIBIT "A"
FAYPWC UTILITY EASEMENT
BUCKHEAD LLC
PIN 0417-44-2511**

FAYETTEVILLE NORTH CAROLINA
CROSS CREEK TWP. CUMBERLAND COUNTY

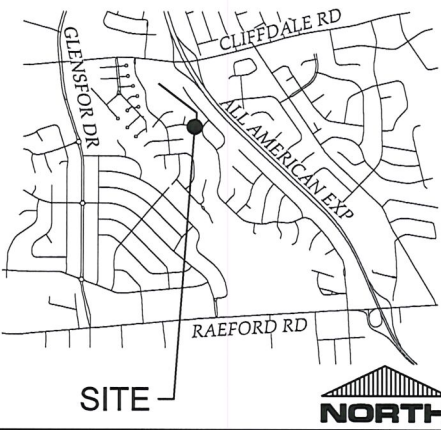


TWC Doc. No. 2858C-L002



FAYETTEVILLE PUBLIC
WORKS COMMISSION
955 OLD WILMINGTON RD.
FAYETTEVILLE, N.C. 28301
(910) 223-4730

SURVEY/GPS BY: MRH	DATE: 9/9/2019	REVISIONS	BY: RWP
LAYOUT BY: TWC	DATE: 11/12/19	CLIENT COMMENTS	
PLAN/PROF. BY: RWP			
DESIGN REVIEW BY: W/R ENGR. DEPT.			
APPROVED BY: <i>STP 11/26/2019</i>			
SCALE: HOR: 1"=20' VERT: 1"=NA	SHT: 1 OF 1	AW-15358B	



SITE

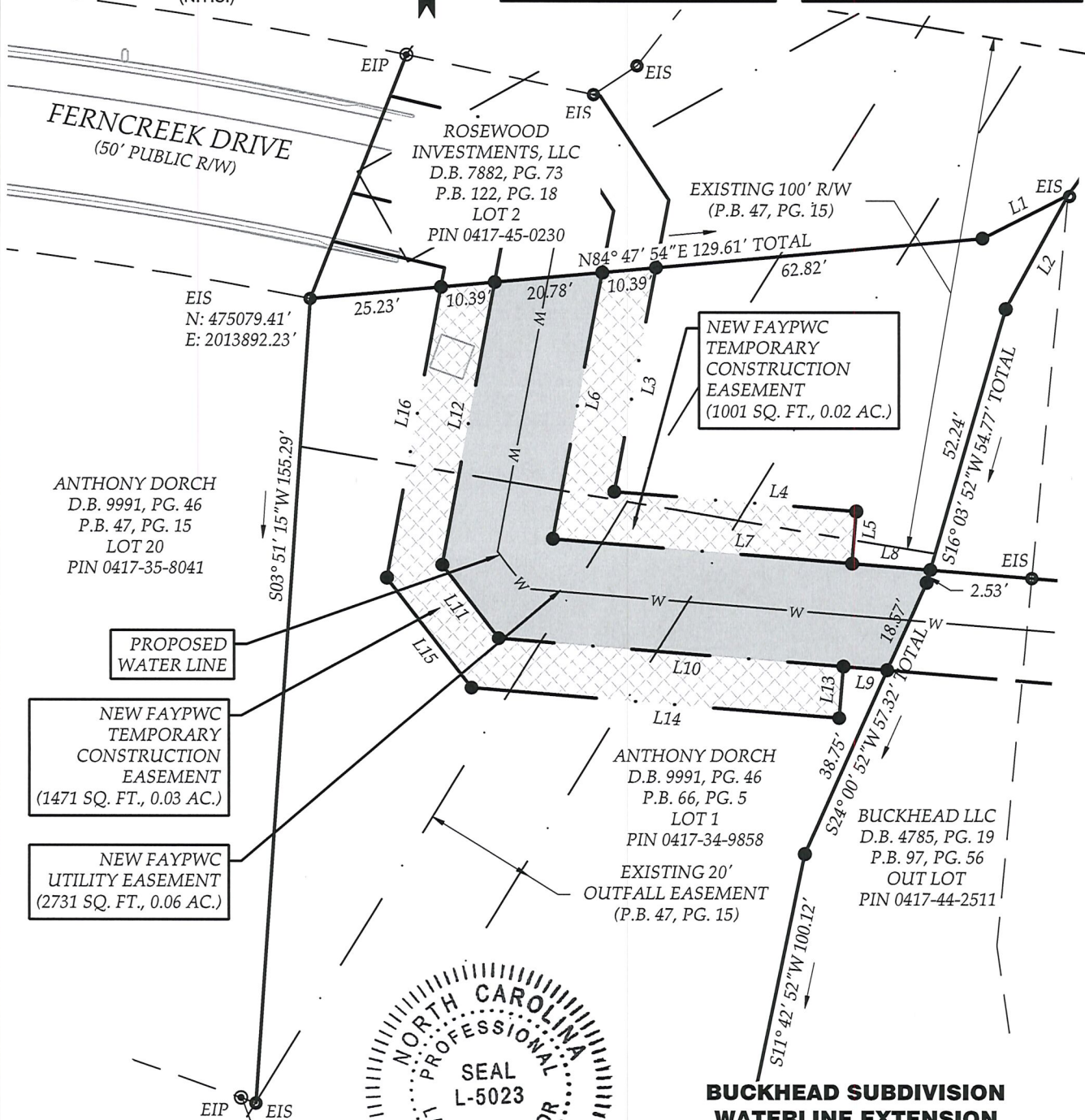


VICINITY MAP
(N.T.S.)

NAD 83 (2011)

LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	N63° 04' 01"E	18.48'
L2	S28° 35' 52"W	25.08'
L3	S10° 30' 26"W	43.88'
L4	S85° 18' 16"E	46.57'
L5	S04° 41' 44"W	10.00'
L6	S10° 30' 26"W	52.14'

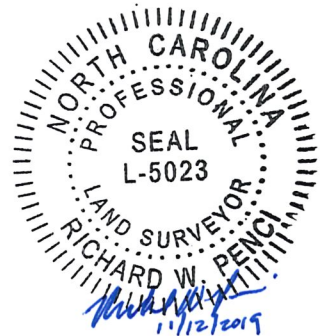
LINE TABLE		
LINE #	DIRECTION	LENGTH
L7	S85° 18' 16"E	57.64'
L8	S85° 18' 16"E	15.03'
L9	N85° 18' 16"W	8.39'
L10	N85° 18' 16"W	66.44'
L11	N37° 23' 55"W	17.88'
L12	N10° 30' 26"E	55.31'
L13	S04° 41' 44"W	10.00'
L14	N85° 18' 16"W	70.89'
L15	N37° 23' 55"W	26.77'
L16	N10° 30' 26"E	56.94'



ANTHONY DORCH
D.B. 9991, PG. 46
P.B. 47, PG. 15
LOT 20
PIN 0417-35-8041

NEW FAYPWC
TEMPORARY
CONSTRUCTION
EASEMENT
(1471 SQ. FT., 0.03 AC.)

NEW FAYPWC
UTILITY EASEMENT
(2731 SQ. FT., 0.06 AC.)



**BUCKHEAD SUBDIVISION
WATERLINE EXTENSION
EXHIBIT "A"
FAYPWC UTILITY EASEMENT
ANTHONY DORCH
PIN 0417-34-9858**

FAYETTEVILLE NORTH CAROLINA
CROSS CREEK TWP. CUMBERLAND COUNTY



THE WOOTEN COMPANY
120 North Boylan Avenue Raleigh NC 27603-1423
919.828.0531 fax 919.834.3589
License Number: F-0115

TWC Doc. No. 2858C-L003



**FAYETTEVILLE PUBLIC
WORKS COMMISSION**
955 OLD WILMINGTON RD.
FAYETTEVILLE, N.C. 28301
(910) 223-4730

SURVEY/GPS BY: MRH	DATE: 11/12/19	REVISIONS	BY
LAYOUT BY: TWC	9/9/2019	CLIENT COMMENTS	RWP
PLAN/PROF. BY: RWP			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: <i>SJP 11/26/2019</i>			
SCALE: HOR: 1"=30' VERT: 1"= NA	SHT: 1 OF 2	AW-15358C	

SURVEY CERTIFICATE

I, RICHARD W. PENCI, CERTIFY THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION AND IS BASED UPON REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS BEING TAKEN FROM REFERENCES SHOWN; THAT THE RATIO OF PRECISION AS CALCULATED IS GREATER THAN 1:10,000; THAT THIS MAP WAS PREPARED IN ACCORDANCE WITH G.S. 47-30(M) AS AMENDED. I FURTHER CERTIFY THAT THE SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXEMPTION OR EXCEPTION TO THE DEFINITION OF SUBDIVISION. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 12th DAY OF November, 2019.



Richard W. Penci 11/12/2019
 RICHARD W. PENCI
 PROFESSIONAL LAND SURVEYOR L-5023

SURVEY NOTES


1. DISTANCES SHOWN HEREON ARE HORIZONTAL GROUND MEASUREMENTS, IN US SURVEY FEET, UNLESS STATED OTHERWISE.
2. BEARINGS ARE BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM (NAD83/2011).
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6. THE PROPERTIES SHOWN HEREON DO NOT LIE WITHIN A SPECIAL FLOOD HAZARD AREA AS REFERENCED BY FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 3720041700J, EFFECTIVE DATE JANUARY 5, 2007.

LEGEND

- SURVEYED PROPERTY LINE
- - - - - PROPERTY LINE FROM RECORD
- EASEMENT LINE
- ⊙ EIP EXISTING IRON PIPE
- EIS EXISTING IRON STAKE (REBAR)
- COMPUTED POINT
- [Hatched Box] NEW FAYPWC UTILITY EASEMENT
- [Cross-hatched Box] NEW FAYPWC TEMPORARY CONSTRUCTION EASEMENT
- PIN PARCEL IDENTIFICATION NUMBER (GIS)
- D.B. DEED BOOK
- PG. PAGE
- P.B. PLAT BOOK

**BUCKHEAD SUBDIVISION
 WATERLINE EXTENSION
 EXHIBIT "A"
 FAYPWC UTILITY EASEMENT
 ANTHONY DORCH
 PIN 0417-34-9858**

FAYETTEVILLE NORTH CAROLINA
 CROSS CREEK TWP. CUMBERLAND COUNTY

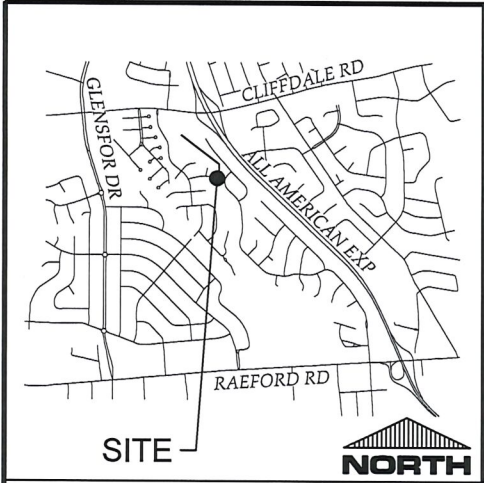


THE WOOTEN COMPANY
 120 North Boylan Avenue Raleigh NC 27603-1423
 919.828.0531 fax 919.834.3589
 License Number: F-0115
 TWC Doc. No. 2858C-L003

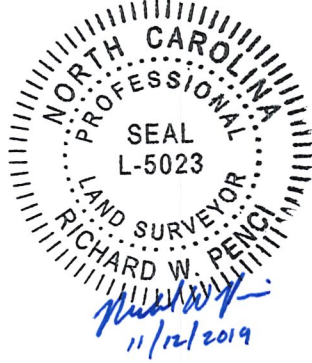


**FAYETTEVILLE PUBLIC
 WORKS COMMISSION**
 955 OLD WILMINGTON RD.
 FAYETTEVILLE, N.C. 28301
 (910) 223-4730

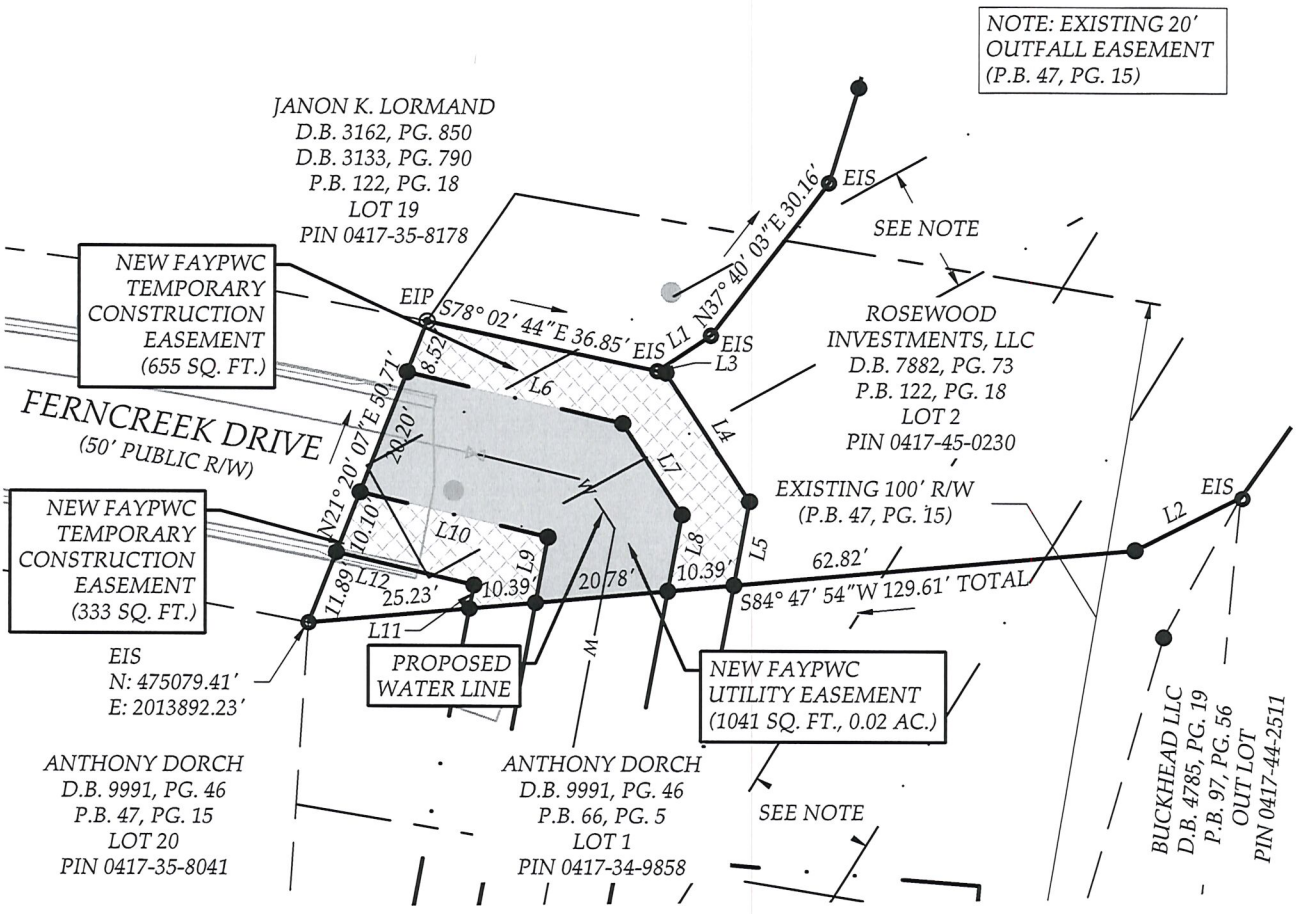
SURVEY/GPS BY: MRH	DATE	REVISIONS	BY
LAYOUT BY: TWC	DATE: 11/12/19	9/9/2019	CLIENT COMMENTS
PLAN/PROF. BY: RWP			RWP
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: <u>SJP 11/24/2019</u>			
SCALE: HOR: 1"=30' VERT: 1"= NA	SHT: 2 OF 2	AW-15358C	



VICINITY MAP
(N.T.S.)



LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	N56° 26' 23"E	10.05'
L2	S63° 04' 01"W	18.48'
L3	S78° 06' 03"E	1.36'
L4	S33° 06' 01"E	24.02'
L5	S10° 30' 26"W	13.36'
L6	S76° 42' 28"E	34.69'
L7	S33° 06' 01"E	17.00'
L8	S10° 30' 26"W	12.18'
L9	N10° 30' 26"E	10.49'
L10	N76° 42' 28"W	30.20'
L11	N10° 30' 26"E	3.78'
L12	N76° 42' 28"W	22.09'



NOTE: EXISTING 20' OUTFALL EASEMENT (P.B. 47, PG. 15)

**BUCKHEAD SUBDIVISION
WATERLINE EXTENSION
EXHIBIT "A"
FAYPWC UTILITY EASEMENT
ROSEWOOD
INVESTMENTS, LLC
PIN 0417-45-0230**

THE WOOTEN COMPANY
120 North Boylan Avenue Raleigh NC 27603-1423
919.828.0531 fax 919.834.3589
License Number: F-0115
TWC Doc. No. 2858C-L004

FAYETTEVILLE NORTH CAROLINA
CROSS CREEK TWP. CUMBERLAND COUNTY



**FAYETTEVILLE PUBLIC
WORKS COMMISSION**
955 OLD WILMINGTON RD.
FAYETTEVILLE, N.C. 28301
(910) 223-4730

SURVEY/GPS BY: MRH	DATE: 11/12/19	REVISIONS	BY
LAYOUT BY: TWC	9/9/2019	CLIENT COMMENTS	RWP
PLAN/PROF. BY: RWP			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: SJR 11/26/2019			
SCALE: HOR: 1"=30' VERT: 1"= NA	SHT: 1 OF 2	AW-15358D	

SURVEY CERTIFICATE

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Richard W. Penci 11/12/2019
 RICHARD W. PENCI
 PROFESSIONAL LAND SURVEYOR L-5023

SURVEY NOTES

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LEGEND

- SURVEYED PROPERTY LINE
- PROPERTY LINE FROM RECORD
- EASEMENT LINE
- EIP EXISTING IRON PIPE
- EIS EXISTING IRON STAKE (REBAR)
- COMPUTED POINT
- NEW FAYPWC UTILITY EASEMENT
- NEW FAYPWC TEMPORARY CONSTRUCTION EASEMENT
- PIN PARCEL IDENTIFICATION NUMBER (GIS)
- D.B. DEED BOOK
- PG. PAGE
- P.B. PLAT BOOK

**BUCKHEAD SUBDIVISION
 WATERLINE EXTENSION
 EXHIBIT "A"
 FAYPWC UTILITY EASEMENT
 ROSEWOOD
 INVESTMENTS, LLC
 PIN 0417-45-0230**

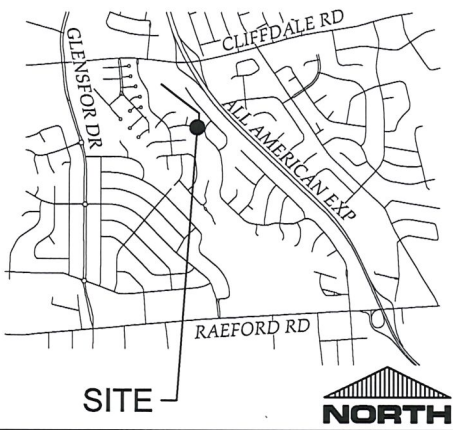
FAYETTEVILLE NORTH CAROLINA
 CROSS CREEK TWP. CUMBERLAND COUNTY

THE WOOTEN COMPANY
 120 North Boylan Avenue Raleigh NC 27603-1423
 919.828.0531 fax 919.834.3589
 License Number: F-0115
 TWC Doc. No. 2858C-L004



**FAYETTEVILLE PUBLIC
 WORKS COMMISSION**
 955 OLD WILMINGTON RD.
 FAYETTEVILLE, N.C. 28301
 (910) 223-4730

SURVEY/GPS BY: MRH	DATE	REVISIONS	BY
LAYOUT BY: TWC	DATE: 11/12/19	9/9/2019	CLIENT COMMENTS RWP
PLAN/PROF. BY: RWP			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: <i>SJP</i> 11/26/2019			
SCALE: HOR: 1"=30' VERT: 1"=NA	SHT: 2 OF 2	AW-15358D	



VICINITY MAP
(N.T.S.)

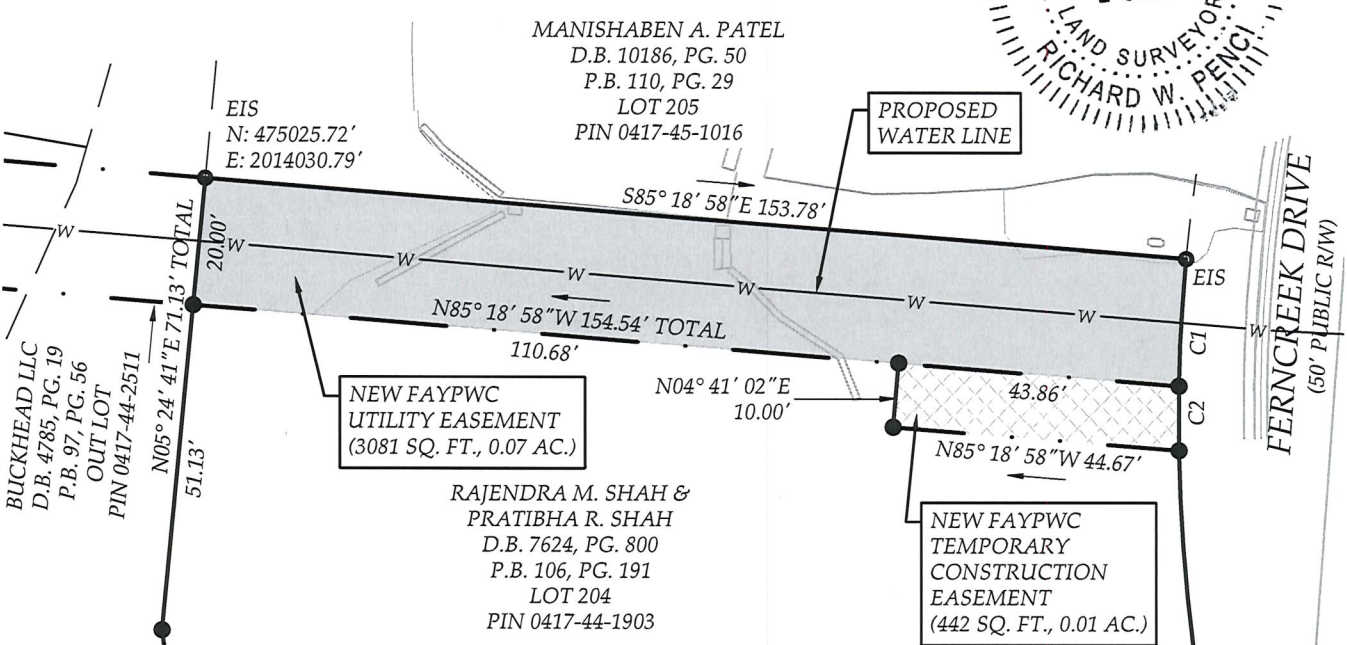
CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD
C1	20.01'	276.31'	004° 08' 59"	S03° 10' 11"W	20.01'
C2	10.03'	276.31'	002° 04' 50"	S00° 03' 17"W	10.03'
C3	99.04'	276.31'	020° 32' 14"	S11° 15' 15"E	98.51'

SURVEY CERTIFICATE

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Richard W. Penci 11/12/2019
 RICHARD W. PENCI
 PROFESSIONAL LAND SURVEYOR L-5023



SURVEY NOTES

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- THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO MATTERS A FULL TITLE SEARCH WOULD DISCLOSE.
- THE PROPERTIES SHOWN HEREON DO NOT LIE WITHIN A SPECIAL FLOOD HAZARD AREA AS REFERENCED BY FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 3720041700J, EFFECTIVE DATE JANUARY 5, 2007.

LEGEND

- SURVEYED PROPERTY LINE
- PROPERTY LINE FROM RECORD
- EASEMENT LINE
- EIP EXISTING IRON PIPE
- EIS EXISTING IRON STAKE (REBAR)
- COMPUTED POINT
- NEW FAYPWC UTILITY EASEMENT
- NEW FAYPWC TEMPORARY CONSTRUCTION EASEMENT
- PIN PARCEL IDENTIFICATION NUMBER (GIS)
- D.B. DEED BOOK
- PG. PAGE
- P.B. PLAT BOOK

**BUCKHEAD SUBDIVISION
 WATERLINE EXTENSION
 EXHIBIT "A"
 FAYPWC UTILITY EASEMENT
 RAJENDRA M. SHAH
 & PRATIBHA R. SHAH
 PIN 0417-44-1903**

FAYETTEVILLE NORTH CAROLINA
 CROSS CREEK TWP. CUMBERLAND COUNTY

THE WOOTEN COMPANY
 120 North Boylan Avenue Raleigh NC 27603-1423
 919.828.0531 fax 919.834.3589
 License Number: F-0115

TWC Doc. No. 2858C-L001



**FAYETTEVILLE PUBLIC
 WORKS COMMISSION**
 955 OLD WILMINGTON RD.
 FAYETTEVILLE, N.C. 28301
 (910) 223-4730

SURVEY/GPS BY:	DATE:	REVISIONS	BY
MRH	11/12/19		RWP
LAYOUT BY: TWC	DATE: 11/12/19	CLIENT COMMENTS	
PLAN/PROF. BY: RWP			
DESIGN REVIEW BY: W/R ENGR. DEPT.			
APPROVED BY: <i>SJP 11/26/2019</i>			
SCALE: HOR: 1"=30' VERT: 1"=NA	SHT: 1 OF 1	AW-15358A	



Report of Subsurface Exploration and Geotechnical Engineering Evaluation

Buckhead/Ferncreek Drive Waterline Looping

Fayetteville, North Carolina

F&R Project No. 66Z-0131

Prepared For:

Fayetteville Public Works Commission

955 Old Wilmington Road

Fayetteville, North Carolina 28301

Prepared By:

Froehling & Robertson, Inc.

310 Hubert Street

Raleigh, North Carolina 27603

August 23, 2021



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August 23, 2021

Mr. Kevin Heaphy, PE
WRE Engineer II
Water Resources Engineering
Fayetteville Public Works Commission
955 Old Wilmington Road
Fayetteville, North Carolina 28301

Subject: Report of Subsurface Exploration & Geotechnical Engineering Evaluation
Buckhead/Ferncreek Drive Waterline Looping
Fayetteville, North Carolina
F&R Project No. 66Z-0131

Dear Mr. Heaphy:

Froehling & Robertson, Inc. (F&R) has completed the authorized subsurface exploration and geotechnical engineering evaluation for the above-referenced project in Fayetteville, North Carolina. Our services were performed in general accordance with F&R's Proposal No. 2166-00163 REV1 dated June 23, 2021. The attached report presents our understanding of the project, reviews our exploration procedures, describes existing site and 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.

Cheng Wang, Ph.D., P.E.
Geotechnical Engineer



W. Patrick Alton, P.E.
Assistant Branch Manager



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APPENDICES

APPENDIX I

Site Vicinity Map, Figure No. 1
Boring Location Plan, Figure No. 2
Subsurface Profile, Figure No. 3

APPENDIX II

Key to Soil Classification
Unified Soil Classification Chart
Boring Logs

APPENDIX III

GBA Document "Important Information
approximately Your Geotechnical Engineering
Report"



1.0 PURPOSE & SCOPE OF SERVICES

The purpose of the subsurface exploration and geotechnical engineering evaluation was to explore the subsurface conditions in the area of the proposed waterline 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 two (2) soil test borings (B-1 and B-2) to depths of 25 and 28.8 feet, respectively, below the existing ground surface;
- Completion of one (1) hand auger boring (B-3) with Dynamic Cone Penetration (DCP) testing to a depth of 5.5 feet below the existing ground surface;
- Preparation of typed boring logs, and development of a subsurface profile;
- 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.

2.0 PROJECT INFORMATION

2.1 SITE LOCATION AND DESCRIPTION

The project site is generally located on the west side of All American Freeway in Fayetteville, North Carolina as shown on the Site Vicinity map presented as Figure 1 in Appendix I. Based on the information provided, it is F&R's understanding that the project generally consists of a new waterline that will be installed via directional drill (HDD) from the end of Ferncreek Drive (near the intersection with Lost Tree Court) then east under Buckhead Creek to a different segment of Ferncreek Drive. On the east side of Buckhead Creek, the waterline extends between the two residences located at 4423 and 4427 Ferncreek Drive.

According to the provided "Ferncreek Dr Plan & Profile" dated 5/3/19, the existing ground elevations (EL) range from approximately EL 205 feet at the east end of the site to EL 195 at the banks of Buckhead Creek. Generally, the ground surface elevations slopes down toward Buckhead Creek. The bottom of the creek is about EL 192 feet.

2.2 PROPOSED CONSTRUCTION

Based on review of the referenced plan, the proposed water line will start at station 9+82 with an 8-inch diameter, ductile iron pipe (DIP) that will be installed using traditional open-cut methods for 103 linear feet. The HDD installation then starts at station 11+04 with a 10-inch diameter, high density polyethylene (HDPE) pipe and ends at station 13+44 (240 linear feet). The waterline will then be connected to the existing line with an 8-inch diameter DIP installed by



open-cut methods for 39 linear feet. The water line will end at station 13+82.62. The invert elevation (EL) of the water line will start at approximate EL 196 feet and then slope down to EL 191 at the beginning of the HDD. At the bottom of Buckhead Creek, the invert elevation is at about EL 181 and the HDD pipe is about 11 feet below the creek bottom. The lowest point of the HDD is at about EL 179 near station 12+10. The water line then slopes up to approximate EL 198 at the end of the HDD and at EL 200 at the end of the project.

The water line will extend under an existing masonry retaining wall at about station 12+20 near the boundary of the existing wetland. The wall is 4 to 5 feet tall and consist of masonry block with brick veneer.

3.0 SUBSURFACE EXPLORATION

F&R advanced two Standard Penetration Test (SPT) borings (B-1 and B-2) to depths of 25 and 28.8 feet, respectively, and one Hand Auger (HA) boring (B-3) with DCP testing to a depth of 5.5 feet. The approximate boring locations are shown on the Boring Location Plan presented as Figure 2 in Appendix I. The boring locations were established in the field by making taped measurements from existing site features at the locations selected by Fayetteville PWC. Ground surface elevations at the boring locations were obtained from the provided plan of “Ferncreek Dr Plan & Profile”. Given these methods of determination, the boring locations and ground surface elevations should only be considered approximate.

The SPT borings (B-1 and B-2) were advanced by an ATV-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-value representing the penetration resistance of the soil. Five SPT samples were collected in the top 10 feet and then at a nominal interval of approximately 5 feet thereafter.

Boring B-3 was advanced using a hand auger due to limited access to the private property. The boring was advanced using a 3-inch diameter bucket auger. At approximate one-foot intervals in the hand auger borings, a general indication of soil conditions was obtained using a portable Dynamic Cone Penetrometer (DCP) in general accordance with ASTM Standard Technical Publication 399. The penetrometer was first seated on the order of 2 inches by driving its conical point into the test subgrade. After seating, the point was driven up to three additional 1.75-inch increments with blows of a 15-pound hammer falling 20 inches. The number of blows required to penetrate the tested increments are recorded in blows per 1.75-inch increments (bpi) and reported on the attached Hand Auger/DCP logs. The DCP values can be correlated to SPT N-values and provides a general indication



of in-situ soil conditions and has been correlated with certain engineering properties of soils including soil strength and consistency.

A representative portion of soil was obtained from each SPT and HA/DCP 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 at the termination of drilling in all of the borings. Borings B-2 and B-3 were backfilled immediately after drilling completion since B-2 was located in the road and B-3 was located on private property. Groundwater level measurement was attempted again after a stabilization period of approximately 24-hours had elapsed after the completion of drilling in boring B-1.

No laboratory testing was performed for this report.

4.0 REGIONAL GEOLOGY & SUBSURFACE CONDITIONS

4.1 REGIONAL GEOLOGY

The referenced site is located within the Coastal Plain Province of North Carolina. The Coastal Plain Province is a broad, flat plain with widely-spaced and 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 (one to two counties north and west of the site) to over ten thousand feet in some areas along the coast. Our test borings were terminated in Coastal Plain soils.

According to the *Geologic Map of North Carolina (1985)*, the site is specifically located within an area mapped as Cretaceous-period deposits and is comprised of sedimentary deposits that appear to be located within the Middendorf Formation. The Middendorf Formation is described as sandy deposits that vary in color from gray to orange gray with discontinuous bedding with cross bedding common.

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.

A Subsurface Profile has been prepared from the boring data to graphically illustrate the subsurface conditions encountered at the site. The Subsurface Profile is presented as Figure 3 in Appendix I. Strata breaks designated on the boring logs and subsurface profile 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 boring locations are presented on the Boring Logs provided in Appendix II.

4.2.2 Surficial Materials

Surficial Organic Soils were encountered in boring B-1 to a depth of about 0.2 feet. 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.

Asphalt and aggregate base course (ABC stone) was encountered at the surface of boring B-2 due to its location in the road. The thickness of the asphalt and ABC stone was about 2 and 3 inches, respectively.

No surficial material was encountered at boring B-3.

4.2.3 Fill Materials

Existing fill was encountered in boring B-3 to a depth of approximately 4 feet. The fill material was classified as very loose, clayey and silty sands (USCS – SC and SM) exhibiting DCP N_c -values ranging from 1 to 3 blows per increment (bpi). The fill material contained trace amounts of organics, roots and wood fragments.

DCP N_c -values less than or equal to 4 bpi are generally indicative of fill with poor compaction, fill with DCP N_c -values of 5 to 8 bpi are generally indicative of fill with moderate compaction. Well-compacted structural fill not containing gravel or any hard material would generally be expected



to exhibit DCP N_c -values of 9 bpi or greater. In general, it appears that the fill was poorly compacted.

4.2.4 Alluvial Soils

Below the fill material at boring B-3, alluvial soils were encountered to boring termination at a depth of about 5.5 feet. Alluvial soils are soils that have been transported and deposited by water. The alluvial soils consisted of very soft, sandy clays (USCS – CL) and contained roots and wood fragments. The alluvial soils exhibited DCP N_c -values ranging from 1 to 2 blows per increment (bpi).

4.2.5 Coastal Plain Soils

Coastal Plain soils were encountered below the surficial organic soils in boring B-1 and below the ABC stone at boring B-2. The Coastal Plain soils generally consisted of silty and clayey sands (SM & SC) and low plasticity sandy clays (CL).

The relative density of the Coastal Plain soils generally ranged from loose to very dense with SPT N-values ranging from 5 to over 100 bpf for the sands and stiff to very stiff with SPT N-values ranging from 10 to 16 bpf for the clays.

A layer of very dense silty sand (SM) with SPT N-values over 100 bpf was encountered in borings B-1 and B-2 at depths of about 19.5 and 18.5 feet, respectively. At B-1, the layer was about 4 feet thick and was underlain by very stiff sandy clay. At boring B-2, the layer was at least 10.3 feet thick and the boring terminated in this very dense layer.

4.3 SOIL MOISTURE AND GROUNDWATER CONDITIONS

A majority of the soil samples recovered from the borings were in a wet and saturated (*i.e.*, more than 5 percent of the estimated optimum moisture content) soil condition. Moist soil conditions were generally encountered in all of the borings from the ground surface to depths ranging from 3 to 13.5 feet. The remaining soil samples were generally in a saturated soil condition and extended to the termination depths of the borings.

Groundwater level measurements were attempted at the termination of drilling in all of the borings. Groundwater was encountered in all of the borings at depths ranging from 5.1 to 11.9 feet. Borings B-2 and B-3 were backfilled immediately after drilling completion since B-2 was located in the road and B-3 was located on private property. Groundwater was measured again in boring B-1 after a stabilization period of about 24 hours following completion of drilling, and groundwater was encountered at a depth of about 6.7 feet.

It should be noted that the 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. F&R notes that due to the presence of relatively impervious silty and clayey soils noted on the project site, trapped or perched water conditions may be encountered during periods of inclement weather and during seasonally wet periods.

5.0 GEOTECHNICAL 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 three soil test borings performed by F&R, our experience with similar projects and subsurface conditions, and the information provided to us regarding the proposed construction. It is our opinion that the subsurface conditions encountered at the project site are generally suitable for the proposed construction from a geotechnical engineering perspective provided the recommendations presented in subsequent sections of this report are followed throughout the design and construction phases of this project.

5.2 HORIZONTAL DIRECTIONAL DRILLING

Based on the investigation, geotechnical recommendations are provided for the working platform below. The HDD installation operation is the responsibility of the specialty contractor. Hence, the selection of HDD equipment and operation procedures are the choices of the specialty contractor.

Based on the results of the soil test borings (B-1 and B-2) and provided “Ferncreek Dr Plan & Profile”, the invert elevation of the HDD is at about EL 191 feet and EL 198 at the beginning and end of the crossing, respectively. At those two locations, it is anticipated that the HDD will mostly encounter moist to saturated, medium dense, sands (SM and SC) and saturated, stiff, low plasticity silty clay (CL). At its lowest point in the middle, the invert elevation is at about EL 179 feet. In this area, it is anticipated that the HDD will encounter very dense silty sands with N-values greater than 100 bpf. The contractor should be made aware that difficult drilling conditions could be encountered during HDD installation.

As part of the HDD design, F&R recommends that the risk of hydrofracture (“frac-out”) should be assessed. To prevent hydraulic fracturing of the soil during the HDD process and inadvertent drilling fluid return, a cavity expansion analysis (Delft Equation) should be performed to determine the maximum down-hole fluid pressure to be used at the site.

5.3 HDD WORKING PLATFORM

It is anticipated that the bearing grade at the entry and receiving points will consist of moist, loose to medium dense, silty and clayed sands (SM and SC). Subgrade repair will not likely be required, but we recommend that a qualified geotechnical engineer or his representative



evaluate working platform bearing grades once final locations are selected and prior to starting the advancement of the HDD.

5.4 EXISTING RETAINING WALL

As indicated above, an existing masonry retaining wall is located at about station 12+20 at the boundary of an existing wetland. The wall is observed to be approximate 4 to 5 feet tall and consist of block with brick veneer. Based on the results of boring B-3, the soil material at the back of the wall consisted of generally very loose, moist to wet, silty and clayey sands (SM and SC) underlain by very soft, wet, sandy clay (CL). F&R hand excavated in front of the wall at two separate locations to investigate the depth and thickness of the existing footing, but no footing was encountered. The embedment depth of the wall below the ground surface at the front of the wall was measured to be 0.5 to 1.5 feet. The bearing material beneath the wall was observed to be alluvial soils classified as dark gray, wet, sandy clays.

As requested, F&R will perform a preconstruction survey of the wall once we have been informed that construction is imminent. The purpose of the survey will be to document the existing condition of the wall above the proposed HDD. F&R will also perform one periodic inspection of the wall during construction and a post-construction survey.

5.5 TEMPORARY EXCAVATION RECOMMENDATIONS

F&R does not believe temporary excavations will be required for this project based on our understanding of the project. However, if temporary excavations are required to limit disturbance to the road and neighboring properties, they should be sufficiently sloped and/or require temporary shoring such as trench boxes or internally-braced excavations. However, the type of excavation stabilization or shoring system used should be selected and designed by the contractor. Based on the boring data, excavations may extend through and into loose to very dense/stiff soils, moist and/or saturated soils, and below the groundwater, and flatter side slopes and/or special excavation or stabilization systems may be required.

Mass excavations and other excavations required for construction of this project should 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 inspections 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 excavations at a distance equaling or exceeding the depth of the excavation. F&R cautions that the actual excavation slopes will need to be evaluated frequently each day by the “competent person” and flatter slopes or the use of shoring may be required to maintain a safe excavation depending



upon excavation-specific circumstances. The contractor is responsible for providing the “competent person” and all aspects of site excavation safety. F&R can evaluate specific excavation slope situations if we are informed and requested by the owner, designer, or contractor’s “competent person”.

5.6 DEWATERING

As previously mentioned, groundwater was encountered in all of the borings at depths ranging from 5.1 to 11.9 feet. Stabilized groundwater was encountered at boring B-1 at a depth of about 6.7 feet below ground surface. Stabilized groundwater was not measured at borings B-2 and B-3. Both borings were backfilled immediately after drilling completion since B-2 was located in the road and B-3 was located on private property. It should be noted that groundwater elevations at borings B-2 and B-3 were based on a measurement obtained immediately after drilling and would likely have been shallower if the groundwater level was allowed to stabilize for at least 24-hours. As such, the groundwater depths at those two borings could vary during construction from what has been presented herein.

It should be expected that groundwater will be encountered at the project site during construction and dewatering will be required. The dewatering system to be used should be selected and designed by the contractor, but may consist of sump pit and pumping techniques or a series of well points strategically placed around the construction area. F&R recommends that groundwater levels should be maintained to at least three feet or more below proposed subgrade elevations. Groundwater levels should be lowered prior to performing final excavations to subgrade elevation.

It should be noted that if groundwater levels are not effectively maintained below the base of the excavations during construction, unstable and loosened/softened subgrade conditions could develop, which may cause excessive settlements to develop at the ground surface 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.

5.7 STRUCTURAL FILL PLACEMENT AND COMPACTION

It is expected that the low-plasticity on-site soils (SM, SC, ML, and 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. If highly plastic soils (MH, CL/CH & CH) are encountered during excavation they should not be re-used as structural fill/backfill because they can become unstable at higher moisture contents and be difficult to properly place and compact. In addition, if highly plastic soils are encountered in the open-cut areas



of the project it is recommended that they should not be used as structural fill due to their relatively low unit weight and potential for adverse settlements.

As previously indicated, a majority of the on-site soils will likely be wet to saturated. Depending upon the cut depths and site conditions at the time of construction, a majority of the soils will likely require moisture conditioning (*e.g.*, drying of wet soils or wetting of dry 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.

All structural earth fill should be compacted at a moisture content within ± 3 percentage points of the optimum moisture content and placed in loose lifts not exceeding 8 inches. All structural earth fill (*i.e.*, fill placed in roads and driveways) 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.

F&R recommends that 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, some of 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.



6.0 CONTINUATION OF SERVICES

As previously discussed, the Geotechnical Engineer of Record should be retained to monitor and test earthwork activities. It should be noted that the actual soil conditions at the various subgrade levels and bearing grades will vary across this site and thus the presence of the Geotechnical Engineer 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 utility 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. The following is a recommended scope of services:

- Review of project plans and construction specifications to verify that the recommendations presented in this report have been properly interpreted and implemented;
- Observe the earthwork process to document that subsurface conditions encountered during construction are consistent with the conditions anticipated in this report;
- Observe the subgrade conditions before installing utility lines and before placing structural fill; and
- Observe the placement and compaction of structural fill and backfill, and perform laboratory and field compaction testing of the fill.



7.0 LIMITATIONS

This report has been prepared for the exclusive use of Fayetteville Public Works Commission 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 III. We ask that you please review this information.

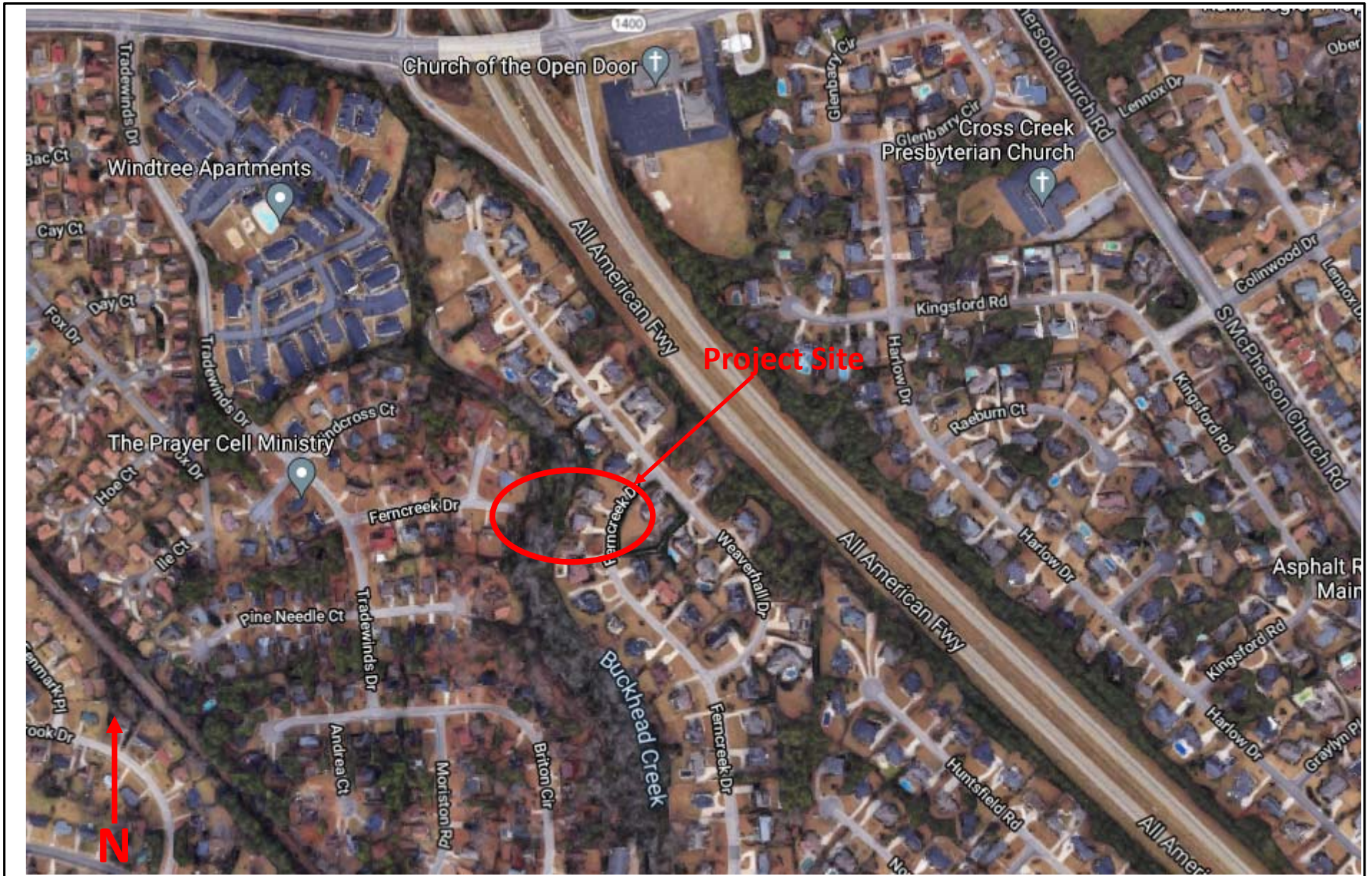
Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced 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



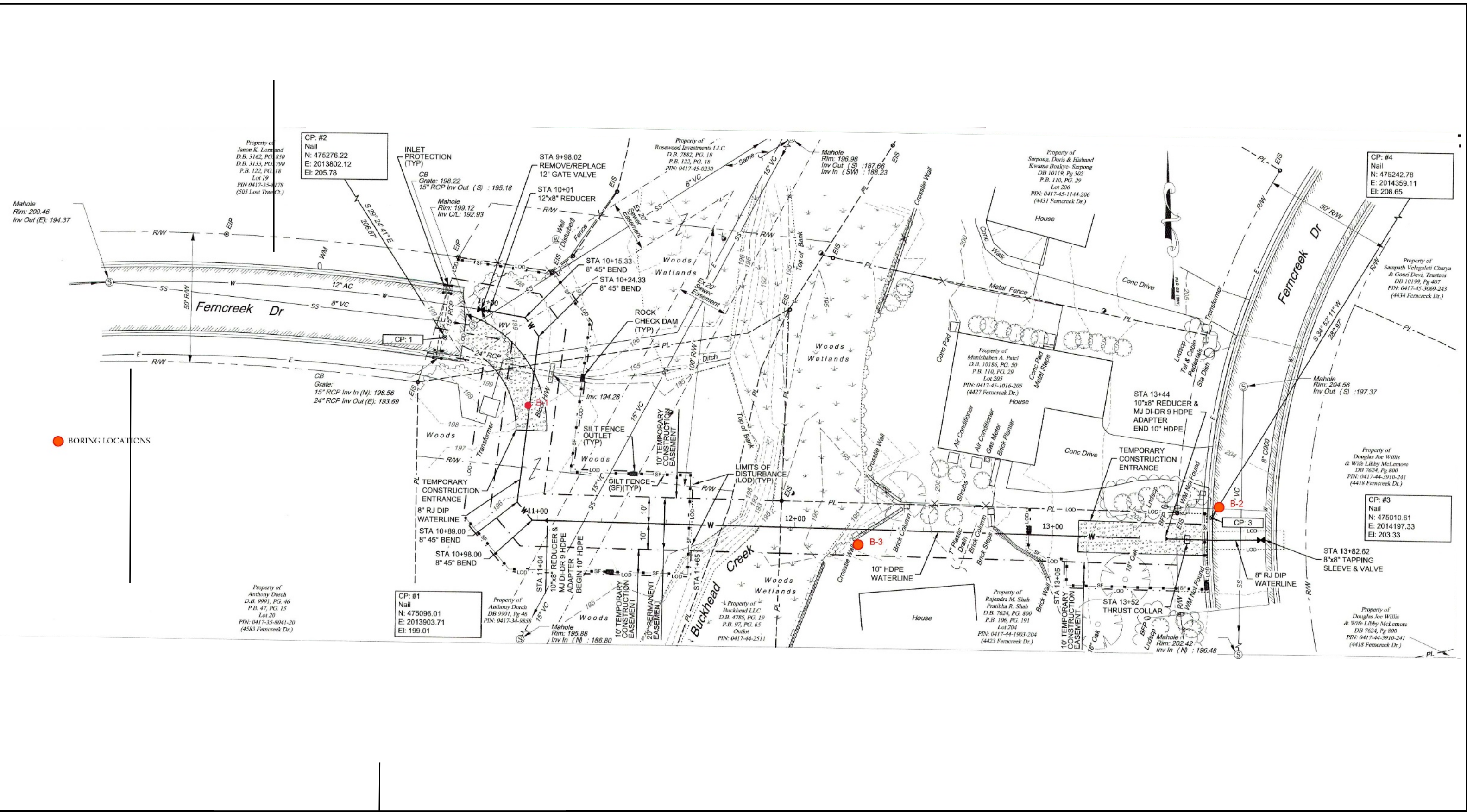
SITE VICINITY MAP

CLIENT: Fayetteville Public Works Commission		FIGURE No.: 1
PROJECT: Buckhead/Ferncreek Drive Waterline Looping		
LOCATION: Fayetteville, North Carolina		
F&R PROJECT No: 66Z-0131		
DRAWN BY: C. Wang	CHECKED BY: P. Alton, P.E.	
DATE: August 2021	SCALE: Not to Scale	



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Boring Location Plan

CLIENT: PWC		FIGURE 2
PROJECT: Buckhead Ferncreek Drive Waterline		
LOCATION: Fayetteville, Cumberland County, North Carolina		
F&R PROJECT No.: 66Z-0131		
DRAWN BY: T.T. Walker	CHECKED BY: C. WANG, P.E.	No.:
DATE: August 2021	SCALE: Not to scale	



SUBSURFACE PROFILE

Plot Based on Elevation
Profile Name: Figure No. 3

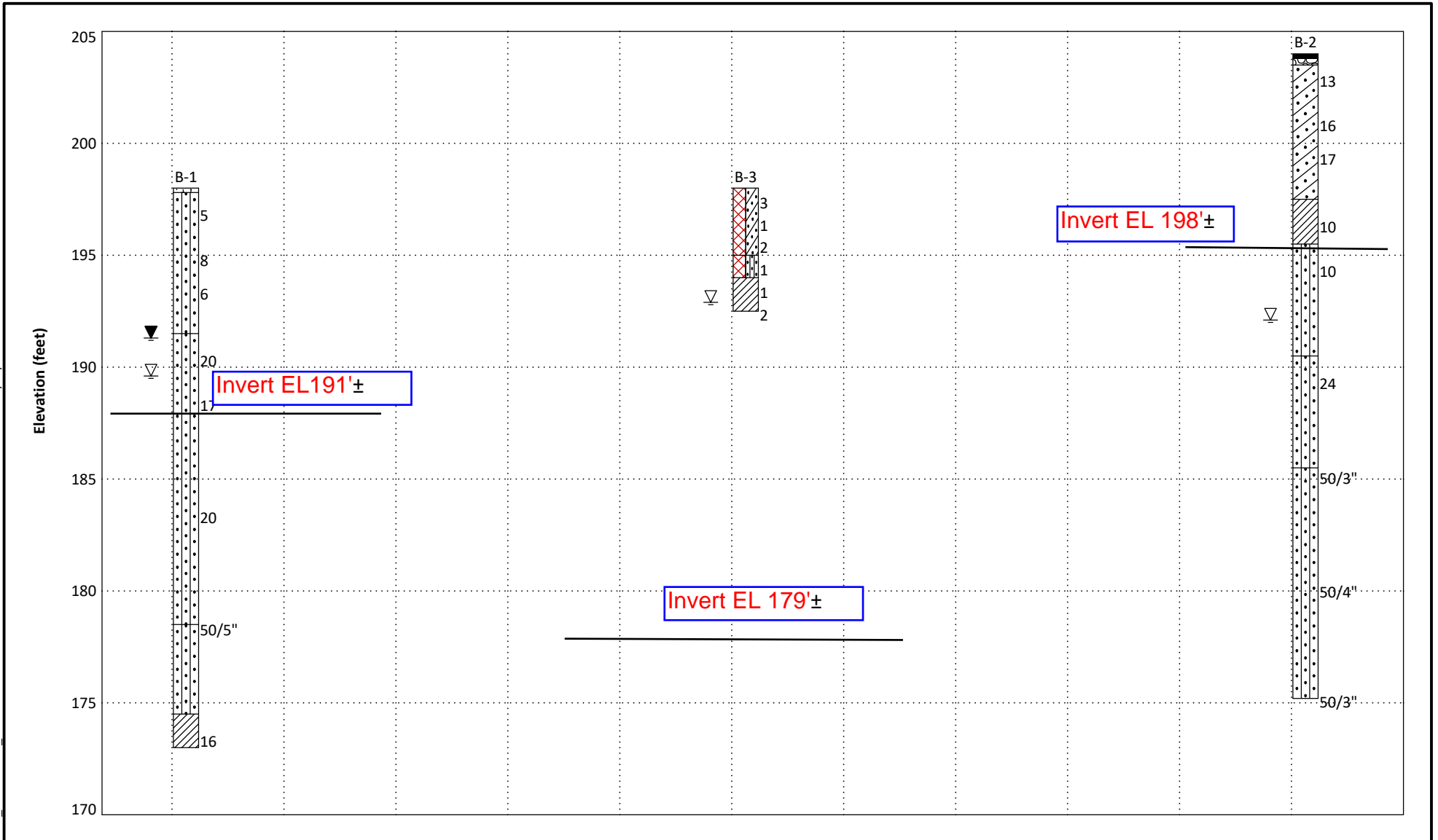
Project No: 66Z-0131

Client: PWC

Project: Buckhead Ferncreek Drive Waterline

City/State: Fayetteville, NC

ELEV_LANDSCAPE_8.5X11 BUCKHEAD FERNCREEK DR. WATERLINE.GPJ F&R.GDT 8/20/21





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:	<u>Coarse</u> - 3/4 to 3 inches diameter <u>Fine</u> - 4.76 mm to 3/4 inch diameter
Sand:	<u>Coarse</u> - 2.0 mm to 4.76 mm diameter <u>Medium</u> - 0.42 mm to 2.0 mm diameter <u>Fine</u> - 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
	<i>GRAVELS with fines</i>		GP	Poorly graded gravels
			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
	<i>SAND with fines</i>		SP	Poorly graded sands
			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: 66Z-0131

Client: PWC

Project: Buckhead Ferncreek Drive Waterline

City/State: Fayetteville, NC

Elevation: 198 ±

Total Depth: 25.0'

Boring Location: See Boring Location Plan
35.055350°, -78.953473°

Drilling Method: 2.25" ID HSA

Hammer Type: Automatic

Date Drilled: 8/4/21

Driller: A. Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
197.8	0.2	SURFICIAL ORGANIC SOILS COASTAL PLAIN: Loose, Moist, Orange-Brown-Gray, Silty Fine to Coarse SAND (SM) with Trace Organics	2-2-3	0.0	5	GROUNDWATER DATA: 0 Hr: 8.4', Caved at 9.2' 24 Hrs: 6.7', Caved at 8.3'
				1.5		
			4-4-4	2.0		
			3-3-3	3.5		
				5.0		
191.5	▼6.5	Medium Dense to Dense, Saturated, Gray-Orange, Silty Fine SAND (SM)	7-10-10	6.5	20	
	▽			8.0		
			11-11-6	8.5		
				10.0		
			6-8-12	13.5		
				15.0		
178.5	19.5	Very Dense, Saturated, Orange, Silty Fine SAND (SM)	28-34-50/5"	18.5	100+	
				19.9		
174.5	23.5	Very Stiff, Saturated, Black, Fine to Coarse Sandy CLAY (CL)	8-7-9	23.5	16	
173.0	25.0			25.0		
		Boring Terminated at 25.0 feet.				

BORING LOG BUCKHEAD FERNCREEK DR. WATERLINE.GPJ F&R.GDT 8/20/21

*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: 66Z-0131

Client: PWC

Project: Buckhead Ferncreek Drive Waterline

City/State: Fayetteville, NC

Elevation: 204 ±

Total Depth: 28.8'

Boring Location: See Boring Location Plan
35.055177°, -78.952562°

Drilling Method: 2.25" ID HSA

Hammer Type: Automatic

Date Drilled: 8/4/21

Driller: A. Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
203.8	0.2	ASPHALT	14-6-7	0.0		GROUNDWATER DATA: 0 Hr: 11.9', Caved at 16.7' Backfilled Immediately After Drilling
203.5	0.5	ABC STONE		1.5	13	
		COASTAL PLAIN: Medium Dense, Moist, Orange-Brown, Clayey Fine SAND (SC)	4-6-10	2.0	16	
			7-7-10	3.5	17	
				5.0		
				6.5		
197.5	6.5	Stiff, Moist, Gray-Brown, Fine Sandy CLAY (CL)	6-4-6	6.5	10	
195.5	8.5	Loose, Moist, Orange-Brown, Silty Fine SAND (SM)	4-4-6	8.0	10	
				8.5		
				10.0		
190.5	13.5	Medium Dense, Saturated, Orange-Brown, Silty Fine SAND (SM)	12-14-10	13.5	24	
				15.0		
185.5	18.5	Very Dense, Saturated, Orange-Brown, Silty Fine SAND (SM)	50/3"	18.5	100+	
				50/4"	23.5	100+
175.2	28.8	Boring Terminated at 28.8 feet.	50/3"	28.5	100+	
		Note: 1. No sample recovered from 23.5'-28.8'				

BORING LOG BUCKHEAD FERNCREEK DR. WATERLINE.GPJ F&R.GDT 8/20/21

*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: 66Z-0131

Client: PWC

Project: Buckhead Ferncreek Drive Waterline

City/State: Fayetteville, NC

Elevation: 198 ±

Total Depth: 5.5'

Boring Location: See Boring Location Plan
35.0554083°, -78.9529667°

Drilling Method: Hand Auger

Hammer Type: DCP

Date Drilled: 8/5/21

Driller: A. Sturchio

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	Nc	Remarks
		FILL: Very Loose, Moist, Brown, Clayey Fine SAND (SC) with Trace Organics	3-3-7	0.0	3	GROUNDWATER DATA: 0 Hr: 5.1', Caved at 5.3' Backfilled Immediately After Drilling
				0.4		
			1-1-1	1.0		
				1.4	1	
			1-2-3	2.0		
				2.4	2	
195.0	3.0	Very Loose, Wet, Orange-Brown, Silty Fine SAND (SM) with Trace Roots and Wood Fragments	1-1-1	3.0		1
				3.4		
194.0	4.0	ALLUVIAL: Very Soft, Wet, Brown-Dark Gray, Fine Sandy CLAY (CL) with Trace Organic Roots and Wood Fragments	1-1-1	4.0	1	
				4.4		
				5.0		
			2-2-2	5.4	2	
192.5	5.5	Hand Auger Boring Terminated at 5.5 feet.		5.4		
		Note: 1. Very Loose, Saturated, Dark Gray, Silty Fine SAND (SM) Encountered at 5.5' 2. Hand auger boring terminated at 5.5' due to encountered running sands				

HAND AUGER LOG BUCKHEAD FERNCREEK DR. WATERLINE.GPJ F&R.GDT 8/20/21

*Penetration is the number of blows required for a 15 lb hammer dropping 20" to drive 1.375" truncated rod a total of 1.75".



APPENDIX III
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*.



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org



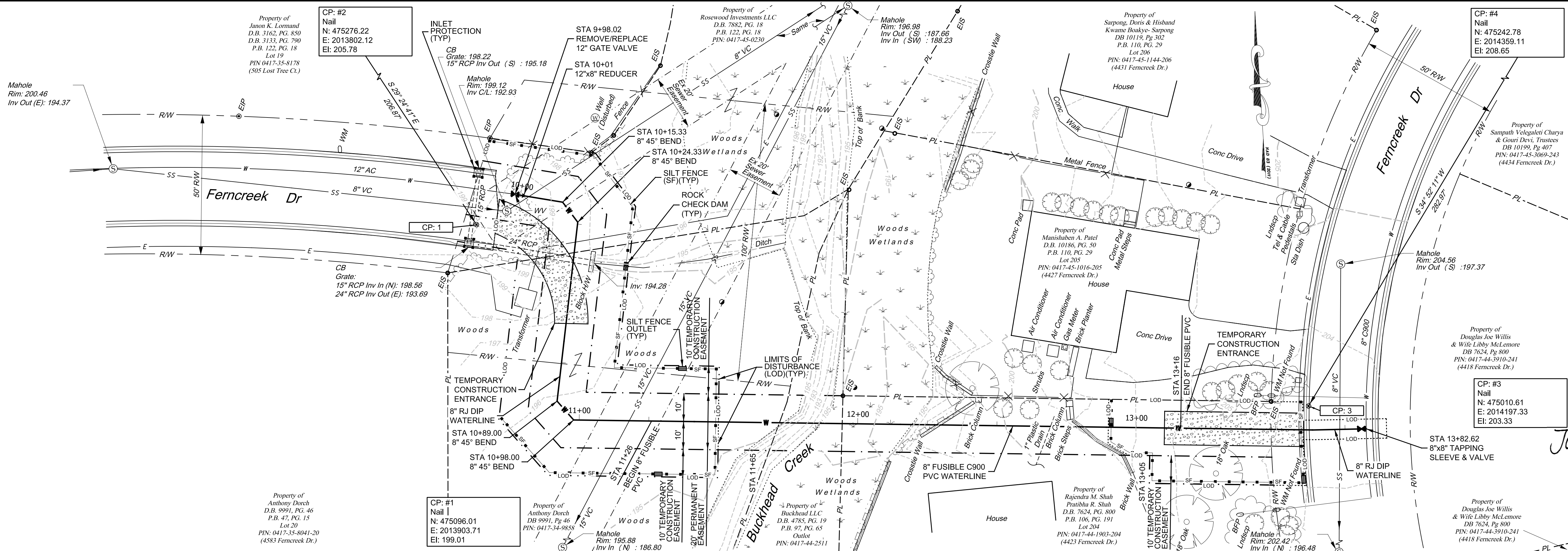
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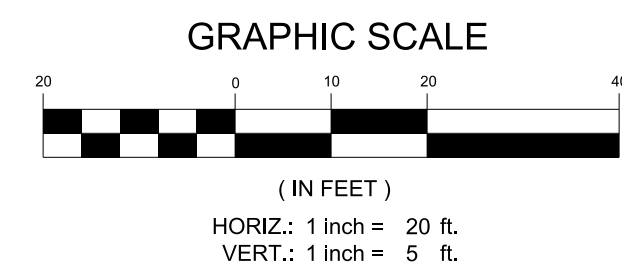
Know what's below. Call before you dig.



LEGEND

Table with 4 columns listing symbols for property lines, pipes, manholes, and easements.

Technical notes regarding coordinate systems and surveying methods.



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UTILITY CONSTRUCTION NOTES:

- 1. ALL WATER MAINS, LATERALS AND APPURTENANCES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS.
2. ALL SEWER MAINS, LATERALS, AND APPURTENANCES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS.
3. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS.
4. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL PROVIDE A MINIMUM OF 48 HOURS NOTICE FOR ALL WATER OUTAGES.
6. CONSTRUCTION STAKING IS REQUIRED FOR ALL PWC WATER AND SEWER UTILITY INSTALLATIONS. CUT SHEETS, SIGNED AND SEALED BY A NC PLS, SHALL BE PROVIDED TO THE PWC WATER RESOURCES ENGINEERING DEPARTMENT AND THE CONTRACTOR IN ADVANCE OF CONSTRUCTION FOR PWC WATER AND SEWER UTILITIES.
7. CONTRACTOR SHALL MAINTAIN A COPY OF THE SIGNED AND SEALED CUT SHEET ON THE JOB SITE. CONSTRUCTION ON PWC WATER AND SEWER UTILITIES CANNOT BEGIN UNTIL THE CONTRACTOR POSSESSES, ON SITE, A SIGNED AND SEALED CUT SHEET FROM THE PROFESSIONAL LAND SURVEYOR.
8. ALL NEW WATER AND SEWER MAINS, LATERALS, AND APPURTENANCES SHALL BE TESTED AND/OR DISINFECTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS PRIOR TO PLACING INTO SERVICE.
9. CONTRACTOR SHALL COORDINATE TESTING AND INSPECTION WITH THE FAYETTEVILLE PWC PROJECT COORDINATOR.
10. ALL DUCTILE IRON PIPE IN SANITARY SEWER SERVICE SHALL HAVE AN INTERIOR LINING OF PROTECTO 401 OR APPROVED EQUAL.
11. ALL NEW MANHOLES ARE TO BE VACUUM-TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS.
12. CONTRACTOR SHALL ABANDON ("KILL-OUT") ANY EXISTING WATER SERVICES THAT WILL NOT BE UTILIZED BY CUTTING THE SERVICE AT THE MAIN, PLUGGING THE CORPORATION, AND TURNING OFF THE CORPORATION. AT THE METER BOX, THE ABANDONED SERVICE IS TO BE CUT OR CRIMPED, AND BURIED A MINIMUM OF 3 FEET BELOW GRADE.
13. CONTRACTOR SHALL ABANDON ("KILL-OUT") ANY EXISTING SEWER SERVICES THAT WILL NOT BE UTILIZED BY UNCOVERING THE EXISTING LATERAL AT THE MAIN, CUT AND PLUG AT BOTH ENDS, REMOVE THE EXISTING CLEANOUT AND COMBINATION, AND PLUG THE TAP OR TEE AT THE MAIN. FOR LATERALS THAT CONNECT TO A MANHOLE AND ARE TO BE ABANDONED ("KILLED-OUT"), THE LATERAL SHALL BE REMOVED FROM THE MANHOLE AND THE REMAINING VOID IN THE MANHOLE SHALL BE FILLED WITH BLOCK AND MORTAR.
14. ALL EXISTING UTILITIES IMPACTED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISHED GRADE IN ACCORDANCE WITH PWC REQUIREMENTS.

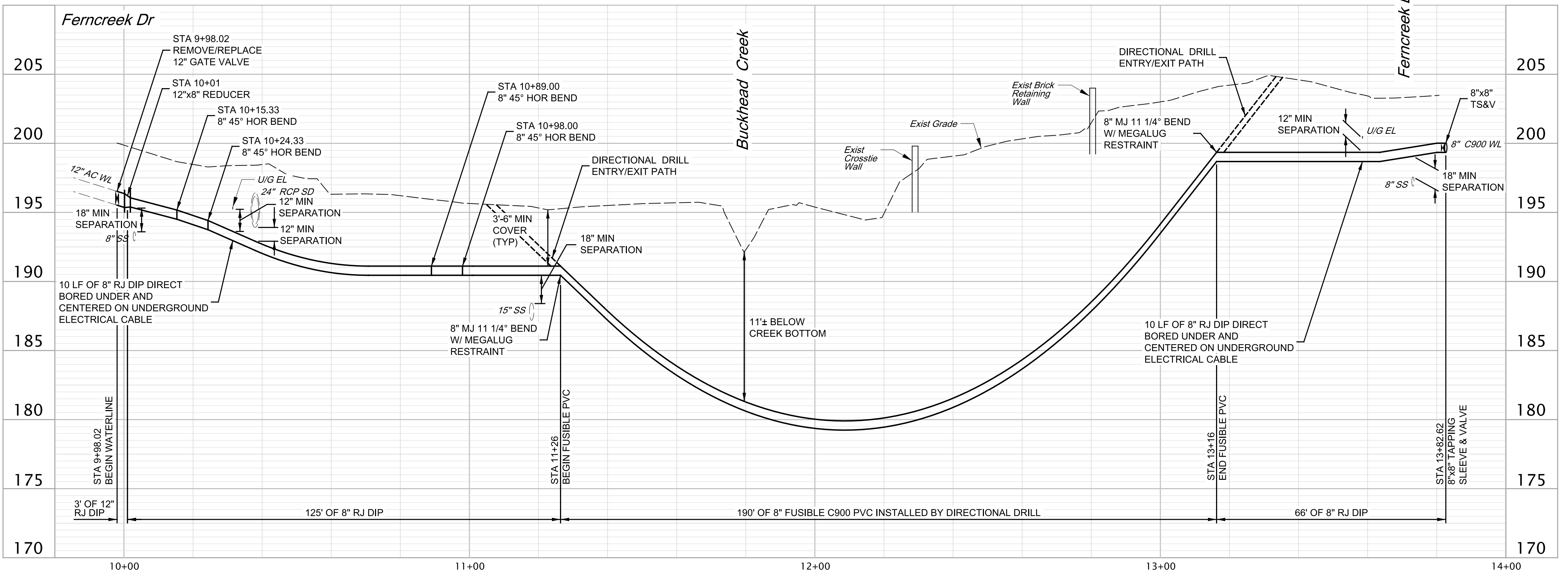
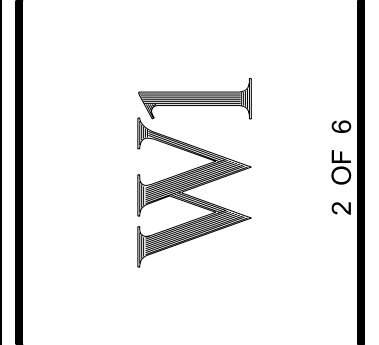


Table with columns: REVISIONS, DATE, SURVEYED BY, DRAWN BY, CHECKED BY, SCALE.

Table with columns: DATE, SURVEYED BY, DRAWN BY, CHECKED BY, SCALE.



BUCKHEAD / FERCREEK DR WATERLINE LOOPING FUSIBLE PVC BY DIRECTIONAL DRILLING FERCREEK DR PLAN & PROFILE

FAYETTEVILLE PUBLIC WORKS COMMISSION WATER RESOURCES ENGINEERING 955 Old Wilmington Road, Fayetteville, NC 28301

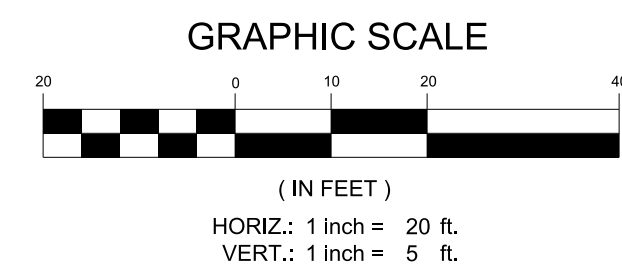
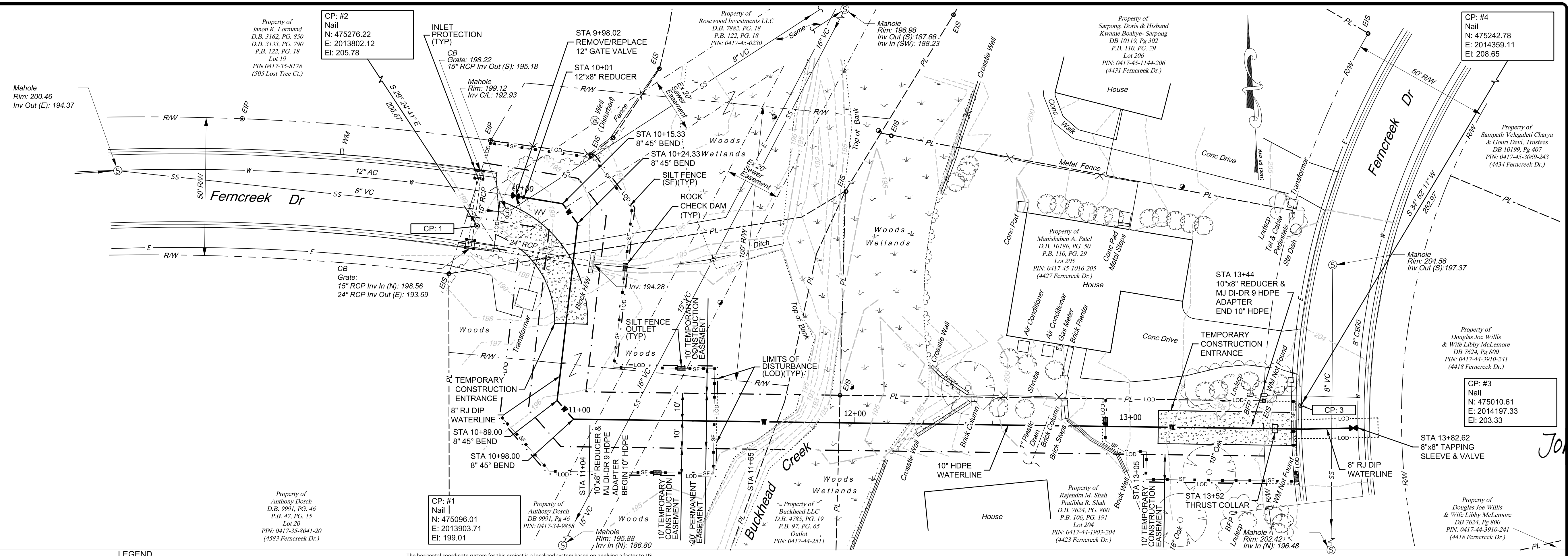


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LEGEND

Table with 4 columns: PROPERTY LINE, EDGE OF PAVEMENT, STORM PIPE, EX. WATER MAIN, EX. SS MAIN, PROP. SS MAIN, PROP. WATER MAIN, PERMANENT EASEMENT, TEMPORARY EASEMENT, FENCE, EX. UTIL. LINES, TREE LINE, DITCH, EX. PROP. GATE VALVE, AIR RELEASE VALVE, CATCH BASIN/DROP INLET, EX. PROP. SSMH, EX. PROP. STORM MH, EX. PROP. UTILITY MH, GAS VALVE, EX. PROP. PLUG, EX. PROP. BLOW-OFF, POWER & LIGHT POLE/GUY WIRE, EX. PROP. WATER METER, EX. PROP. FIRE HYDRANT, UTILITY PEDESTALS, LIFT STATION, EX. PROP. CLEAN OUT, SIGNAL TRAFFIC BOX, MAIL BOX, TREE/SHRUB, TEMPORARY BENCHMARK (TBM), EX. PROP. GATE VALVE, AIR RELEASE VALVE, CATCH BASIN/DROP INLET, EX. PROP. SSMH, EX. PROP. STORM MH, EX. PROP. UTILITY MH, GAS VALVE, EX. PROP. PLUG, EX. PROP. BLOW-OFF, POWER & LIGHT POLE/GUY WIRE, EX. PROP. WATER METER, EX. PROP. FIRE HYDRANT, UTILITY PEDESTALS, LIFT STATION, EX. PROP. CLEAN OUT, SIGNAL TRAFFIC BOX, MAIL BOX, TREE/SHRUB, TEMPORARY BENCHMARK (TBM)

The horizontal coordinate system for this project is a localized system based on applying a factor to US... The factor applied is computed by dividing 1 by the combined factor of the strategic position. The factor applied is computed by dividing 1 by the combined factor of the strategic position.



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- UTILITY CONSTRUCTION NOTES: 1. ALL WATER MAINS, LATERALS AND APPURTENANCES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS. 2. ALL SEWER MAINS, LATERALS, AND APPURTENANCES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS. 3. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS. 4. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. 5. CONTRACTOR SHALL PROVIDE A MINIMUM OF 48 HOURS NOTICE FOR ALL WATER OUTAGES. 6. CONSTRUCTION STAKING IS REQUIRED FOR ALL PWC WATER AND SEWER UTILITY INSTALLATIONS. CUT SHEETS, SIGNED AND SEALED BY A NC PLS, SHALL BE PROVIDED TO THE PWC WATER RESOURCES ENGINEERING DEPARTMENT AND THE CONTRACTOR IN ADVANCE OF CONSTRUCTION FOR PWC WATER AND SEWER UTILITIES. 7. CONTRACTOR SHALL MAINTAIN A COPY OF THE SIGNED AND SEALED CUT SHEET ON THE JOB SITE. CONSTRUCTION ON PWC WATER AND SEWER UTILITIES CANNOT BEGIN UNTIL THE CONTRACTOR POSSESSES, ON SITE, A SIGNED AND SEALED CUT SHEET FROM THE PROFESSIONAL LAND SURVEYOR. 8. ALL NEW WATER AND SEWER MAINS, LATERALS, AND APPURTENANCES SHALL BE TESTED AND/OR DISINFECTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS PRIOR TO PLACING INTO SERVICE. 9. CONTRACTOR SHALL COORDINATE TESTING AND INSPECTION WITH THE FAYETTEVILLE PWC PROJECT COORDINATOR. 10. ALL DUCTILE IRON PIPE IN SANITARY SEWER SERVICE SHALL HAVE AN INTERIOR LINING OF PROTECTO 401 OR APPROVED EQUAL. 11. ALL NEW MANHOLES ARE TO BE VACUUM-TESTED IN ACCORDANCE WITH FAYETTEVILLE PWC STANDARDS. 12. CONTRACTOR SHALL ABANDON ("KILL-OUT") ANY EXISTING WATER SERVICES THAT WILL NOT BE UTILIZED BY CUTTING THE SERVICE AT THE MAIN, PLUGGING THE CORPORATION, AND TURNING OFF THE CORPORATION. AT THE METER BOX, THE ABANDONED SERVICE IS TO BE CUT OR CRIMPED, AND BURIED A MINIMUM OF 3 FEET BELOW GRADE. 13. CONTRACTOR SHALL ABANDON ("KILL-OUT") ANY EXISTING SEWER SERVICES THAT WILL NOT BE UTILIZED BY UNCOVERING THE EXISTING LATERAL AT THE MAIN, CUT AND PLUG AT BOTH ENDS, REMOVE THE EXISTING CLEANOUT AND COMBINATION, AND PLUG THE TAP OR TEE AT THE MAIN. FOR LATERALS THAT CONNECT TO A MANHOLE AND ARE TO BE ABANDONED ("KILLED-OUT"), THE LATERAL SHALL BE REMOVED FROM THE MANHOLE AND THE REMAINING VOID IN THE MANHOLE SHALL BE FILLED WITH BLOCK AND MORTAR. 14. ALL EXISTING UTILITIES IMPACTED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISHED GRADE IN ACCORDANCE WITH PWC REQUIREMENTS.

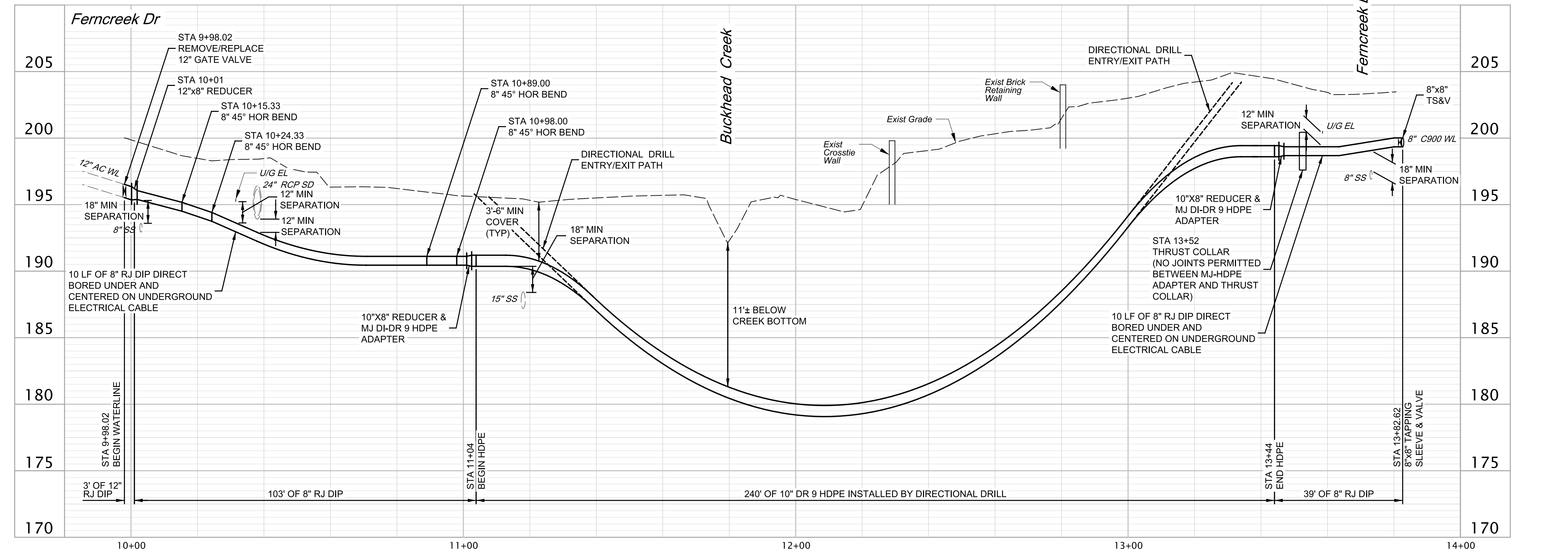
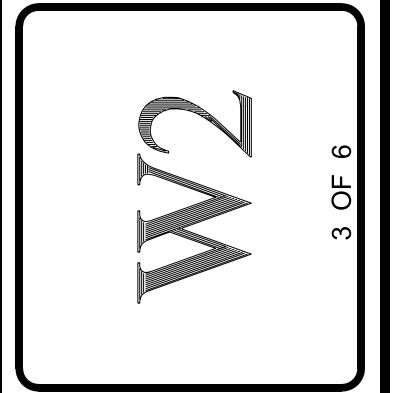


Table with columns: REVISIONS, DATE, BY, CHG, COMMENTS

Table with columns: DATE, SURVEY/DATE BY, DRAWN BY, CHECKED BY, SCALE, HORIZ. VERT.



BUCKHEAD / FERNCREEK DR WATERLINE LOOPING HDPE BY DIRECTIONAL DRILLING FERNCREEK DR PLAN & PROFILE

FAYETTEVILLE PUBLIC WORKS COMMISSION WATER RESOURCES ENGINEERING 955 Old Wilmington Road, Fayetteville, NC 28301

- CONTRACTOR SHALL REPAIR ALL WATER LATERALS AND MAINS DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL REPORT IMMEDIATELY ALL WATER MAIN AND LATERAL BREAKS TO THE FAYETTEVILLE PROJECT COORDINATOR. THE CONTRACTOR SHALL IMMEDIATELY REPORT ALL WATER MAIN AND LATERAL BREAKS TO THE FAYETTEVILLE PROJECT COORDINATOR. THE CONTRACTOR SHALL IMMEDIATELY REPORT ALL WATER MAIN AND LATERAL BREAKS TO THE FAYETTEVILLE PROJECT COORDINATOR. THE CONTRACTOR SHALL IMMEDIATELY REPORT ALL WATER MAIN AND LATERAL BREAKS TO THE FAYETTEVILLE PROJECT COORDINATOR.
- CONTRACTOR SHALL NOT OPERATE FAYETTEVILLE WATER MAIN VALVES WITHOUT FAYETTEVILLE APPROVAL AND SHALL COORDINATE ALL VALVE CLOSINGS WITH FAYETTEVILLE. THE CONTRACTOR SHALL NOT USE HOSE BIBBS OR ANY OTHER METHOD OF BLOW OFF WHICH ALL OWS DOMESTIC WATER CONTAINING SEDIMENTS OR HIGH LEVELS OF CHLORINE TO PASS THROUGH RESIDENTS' METERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES RESULTING FROM ALLOWING "DIRTY" WATER TO ENTER RESIDENTS' PLUMBING SYSTEM, SUCH AS WATER HEATERS, CROWNED CLOTHING, CLOGGED SINKS, ETC.
- WATER MAINS AND LATERALS SHALL BE INSTALLED UTILIZING A FAYETTEVILLE APPROVED CUT-SHEET INDICATING INSTALLATION DEPTH.
- TRANSFER OF WATER SERVICE SHALL BE ACCOMPLISHED AS FOLLOWS:
 - INSTALL, TEST AND STERILIZE NEW MAIN AND LATERALS. LATERALS SHALL BE INSTALLED 18" MINIMUM RIGHT-OF-WAY UNLESS OTHERWISE DIRECTED BY FAYETTEVILLE.
 - TRANSFER EXISTING METER TO NEW METER BOX AND THE NEW WATER MAIN TO EXISTING DOMESTIC SERVICE UTILIZING BRASS FITTINGS. SAME METER NUMBER SHALL BE INSTALLED ON SAME ADDRESS AND/OR CUSTOMER. BLOW OFF SERVICE AT HOSE BIBB ON HOUSE ONLY AFTER METER HAS BEEN TRANSFERRED.
 - AFTER ALL SERVICES ARE TRANSFERRED TO THE NEW SYSTEM, SHUT OFF VALVE ON EXISTING SYSTEM AND ABANDON EXISTING MAINS IN ACCORDANCE WITH FAYETTEVILLE DETAILS.
 - CONTRACTOR SHALL SUPPLY NEW METER BOXES AND DISPOSE OF EXISTING METER BOXES.
- WHEN MAIN IS NOT TO BE ABANDONED, CONTRACTOR SHALL UNCOVER OLD CORPORATION AT MAIN, CLOSE AND PLUG CORPORATION TO ABANDON OLD SERVICE.
- CONTRACTOR SHALL ABANDON (KILL-OUT) ANY EXISTING WATER SERVICES THAT WILL NOT BE UTILIZED BY CUTTING THE SERVICE AT THE MAIN, PLUGGING THE CORPORATION, AND TURNING OFF THE CORPORATION AT THE METER BOX. THE ABANDONED SERVICE IS TO BE CUT OR CRIMPED, AND BURIED A MINIMUM OF 3 FEET BELOW GRADE.
- ALL EXISTING UTILITIES IMPACTED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISHED GRADE IN ACCORDANCE WITH FAYETTEVILLE REQUIREMENTS.
- ALL WORK ON FAYETTEVILLE WATER UTILITIES (MAINS, LATERALS, ETC.) SHALL BE PERFORMED BY A LICENSED UTILITY CONTRACTOR. THE FAYETTEVILLE PUBLIC WORKS COMMISSION SHALL OBSERVE AND APPROVE ALL WORK ON FAYETTEVILLE WATER UTILITIES. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH FAYETTEVILLE REQUIREMENTS.

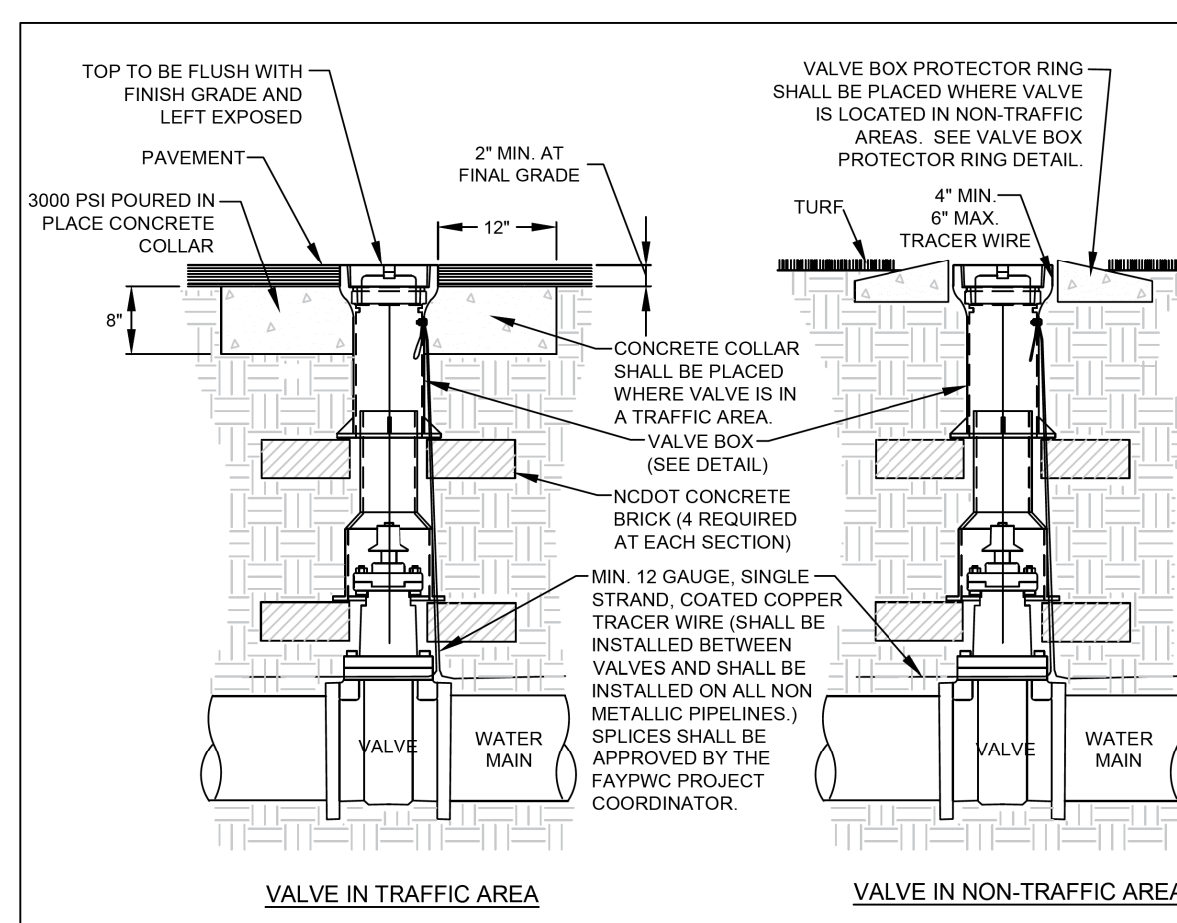
- SEPARATION REQUIREMENTS**
 - LATERAL SEPARATION OF SEWERS AND WATER MAINS:** WATER MAINS SHALL BE LAID AT LEAST 18 INCHES FROM EXISTING OR PROPOSED SEWER MAINS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT LATERAL SEPARATION, IN WHICH CASE:
 - THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN LATERAL; OR
 - THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER MAIN LATERAL WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OR UNDISTURBED EARTH AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN LATERAL.
 - CROSSING A WATER MAIN OVER A SEWER:** WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER MAIN LATERAL, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN LATERAL, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 INCH VERTICAL SEPARATION, IN WHICH CASE BOTH THE WATER MAIN AND SEWER MAIN LATERAL SHALL BE DUCTILE IRON IN ACCORDANCE WITH FAYETTEVILLE REQUIREMENTS.
 - CROSSING WATER MAIN UNDER A SEWER:** WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER MAIN LATERAL, BOTH THE WATER MAIN AND THE SEWER MAIN LATERAL SHALL BE DUCTILE IRON IN ACCORDANCE WITH FAYETTEVILLE REQUIREMENTS. A FULL JOINT OF DUCTILE IRON PIPE SHALL BE INSTALLED ON THE WATER MAIN CENTERED AT THE POINT OF CROSSING.
 - CROSSING STORM DRAINAGE LINES:** A MINIMUM OF 12 INCHES OF VERTICAL CLEARANCE SHALL BE MAINTAINED BETWEEN A WATER LINE CROSSING OVER A STORM DRAINAGE LINE UNLESS DUCTILE IRON PIPE IS USED. IN ADDITION, THREE AND A HALF (3.5) FEET OF COVER MUST BE MAINTAINED OVER THE WATER MAIN OR IT SHALL BE DUCTILE IRON. IF DUCTILE IRON PIPE IS USED THEN TWO AN A HALF (2.5) FEET OF COVER MUST BE MAINTAINED OVER THE WATER MAIN AND A MINIMUM OF 4 INCHES OF VERTICAL CLEARANCE SHALL BE MAINTAINED BETWEEN THE WATER MAIN AND THE STORM DRAINAGE LINE. WHERE A WATER MAIN CROSSES UNDER A STORM DRAINAGE LINE THE MINIMUM OF TWELVE (12) INCHES OF VERTICAL SEPARATION SHALL BE MAINTAINED AND THE WATER MAIN SHALL BE DUCTILE IRON FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING.

- WATER OUTAGES:** THE CONTRACTOR SHALL SCHEDULE A COORDINATION MEETING WITH THE FAYETTEVILLE PROJECT COORDINATOR AND PROJECT ENGINEER A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO ANY PLANNED WATER OUTAGE. THE COORDINATION MEETING SHALL BE HELD IMMEDIATELY PRIOR TO ANY NOTICES BEING ISSUED. ADDITIONALLY, THE CONTRACTOR SHALL LOCATE VERTICALLY AND HORIZONTALLY ANY UTILITIES WITHIN THE WORK AREA, IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS. THE LOCATIONS OF ALL UTILITIES WITHIN THE WORK AREA SHALL BE DETERMINED PRIOR TO THE COORDINATION MEETING. ANY CONFLICTS WITH THE PENDING WORK AND THE EXISTING UTILITIES SHALL BE IDENTIFIED AND A PLAN FOR RESOLVING ANY CONFLICTS SHALL BE PRESENTED TO THE FAYETTEVILLE PUBLIC WORKS COMMISSION PRIOR TO THE COORDINATION MEETING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF THE COORDINATION MEETING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF THE COORDINATION MEETING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF THE COORDINATION MEETING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF THE COORDINATION MEETING.

THE CONTRACTOR SHALL COMPLETE THE REQUIRED WORK AND RESTORE WATER SERVICE WITHIN THE GIVEN TIME PERIOD FOR THE OUTAGE. IF THE FAYETTEVILLE PROJECT COORDINATOR DETERMINES THAT THE CONTRACTOR WILL NOT RESTORE WATER SERVICE WITHIN THE APPROVED TIMEFRAME, THE FAYETTEVILLE PROJECT COORDINATOR WILL DIRECT THE CONTRACTOR ON HOW TO RESTORE WATER SERVICE. THE CONTRACTOR SHALL ADHERE TO ALL INSTRUCTIONS GIVEN BY THE FAYETTEVILLE PROJECT COORDINATOR.

SHOULD THE CONTRACTOR FAIL TO COMPLETE THE WORK WITHIN THE ALLOTTED TIME, THE FAYETTEVILLE PUBLIC WORKS COMMISSION SHALL ASSESS A PENALTY OF \$500 PER 15-MINUTE INTERVAL, OR ANY PORTION THEREOF UNTIL WATER SERVICE IS RESTORED. THIS PENALTY WILL BE DEDUCTED FROM THE CONTRACTOR'S PAY APPLICATION OR BE BILLED DIRECTLY TO THE CONTRACTOR. THE PENALTY MAY BE WAIVED FOR CIRCUMSTANCES BEYOND THE CONTRACTOR'S CONTROL, AS DETERMINED BY THE FAYETTEVILLE PUBLIC WORKS COMMISSION. THE FAYETTEVILLE PROJECT COORDINATOR AND/OR PROJECT ENGINEER RESERVE THE RIGHT TO CANCEL OR POSTPONE THE OUTAGE AT ANY GIVEN TIME, IF DEEMED NECESSARY.

ONCE THE WATER OUTAGE NOTIFICATIONS HAVE BEEN ISSUED, A FOLLOW-UP COORDINATION MEETING WITH THE FAYETTEVILLE PROJECT COORDINATOR AND PROJECT ENGINEER SHALL BE HELD A MINIMUM OF 24 HOURS PRIOR TO THE SCHEDULED OUTAGE. THE PURPOSE OF THIS MEETING IS TO VERIFY THAT THE CONTRACTOR IS PREPARED TO PROCEED WITH THE OUTAGE, AND THAT ALL EQUIPMENT, MATERIALS, TOOLS, AND ALL OTHER INCIDENTALS ARE ON THE PROJECT SITE AND FUNCTIONING. IF FOR ANY REASON THE FAYETTEVILLE PUBLIC WORKS COMMISSION DEEMS THAT THE CONTRACTOR IS NOT PREPARED, THE OUTAGE SHALL BE POSTPONED AND ALL COSTS IMMEDIATELY NOTICED OF THE CANCELLATION. THE OUTAGE SHALL BE POSTPONED A MINIMUM OF TWO (2) WEEKS. NO ADDITIONAL CONTRACT TIME WILL BE GRANTED FOR THIS DELAY. SHOULD THE CONTRACT TIME EXPIRE WITHIN THAT TWO (2) WEEK PERIOD, THE FAYETTEVILLE PUBLIC WORKS COMMISSION RESERVES THE RIGHT TO ASSESS LIQUIDATED DAMAGES, AS OUTLINED IN THESE CONTRACT DOCUMENTS.



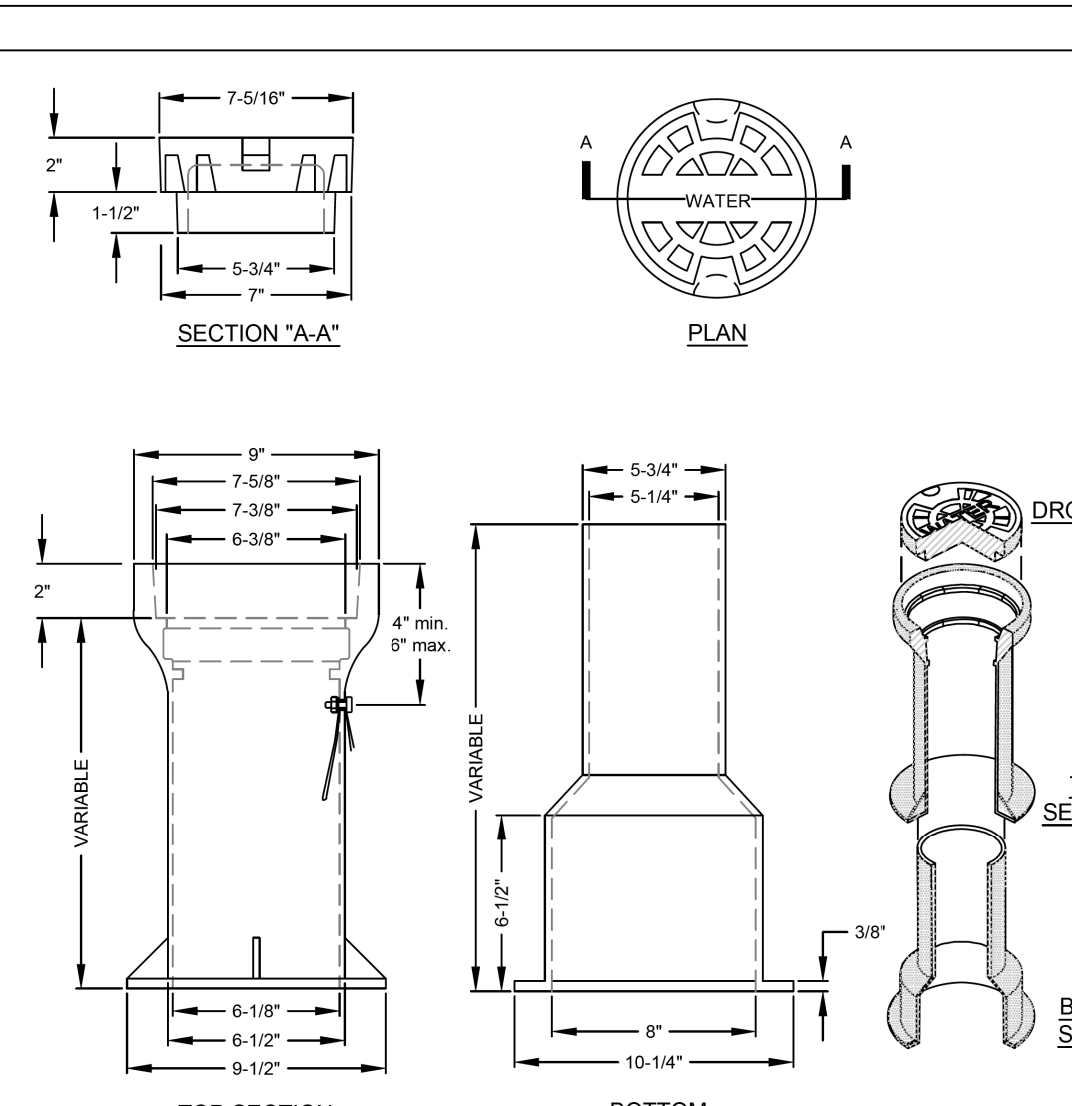
- ALL MATERIALS SHALL BE IN ACCORDANCE WITH FAYETTEVILLE STANDARDS.
- RESILIENT WEDGE GATE VALVE SHALL BE MANUFACTURED BY MUELLER CORP., AMERICAN DARLING OR CLOW CORP.
- ALL VALVES SHALL HAVE 2" SQUARE OPERATING NUT AND SHALL OPEN COUNTERCLOCKWISE.
- VALVE BODY, BONNET, AND GATE SHALL BE IN ACCORDANCE WITH AWWA C-509/C-515 AND NSF61.
- VALVE BODY AND BONNET SHALL BE COATED ON ALL INTERIOR AND EXTERIOR SURFACES WITH A FUSION BONDED EPOXY IN ACCORDANCE WITH AWWA C-509-90.
- ALL VALVES 2" AND SMALLER SHALL HAVE A SAFE WORKING PRESSURE OF 250PSI.
- SEE VALVE BOX DETAIL FOR ADDITIONAL INFORMATION.
- SEE VALVE BOX PROTECTOR RING DETAIL FOR ADDITIONAL INFORMATION.
- SEE VALVE BOX SECTION DETAIL FOR ADDITIONAL INFORMATION.

GATE VALVE		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.6	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

NO.	DATE	REVISION
1	6/06	ADDED NOTE NO. 9
2	7/09	CLARIFIED NOTES

WATER UTILITY NOTES		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.1	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

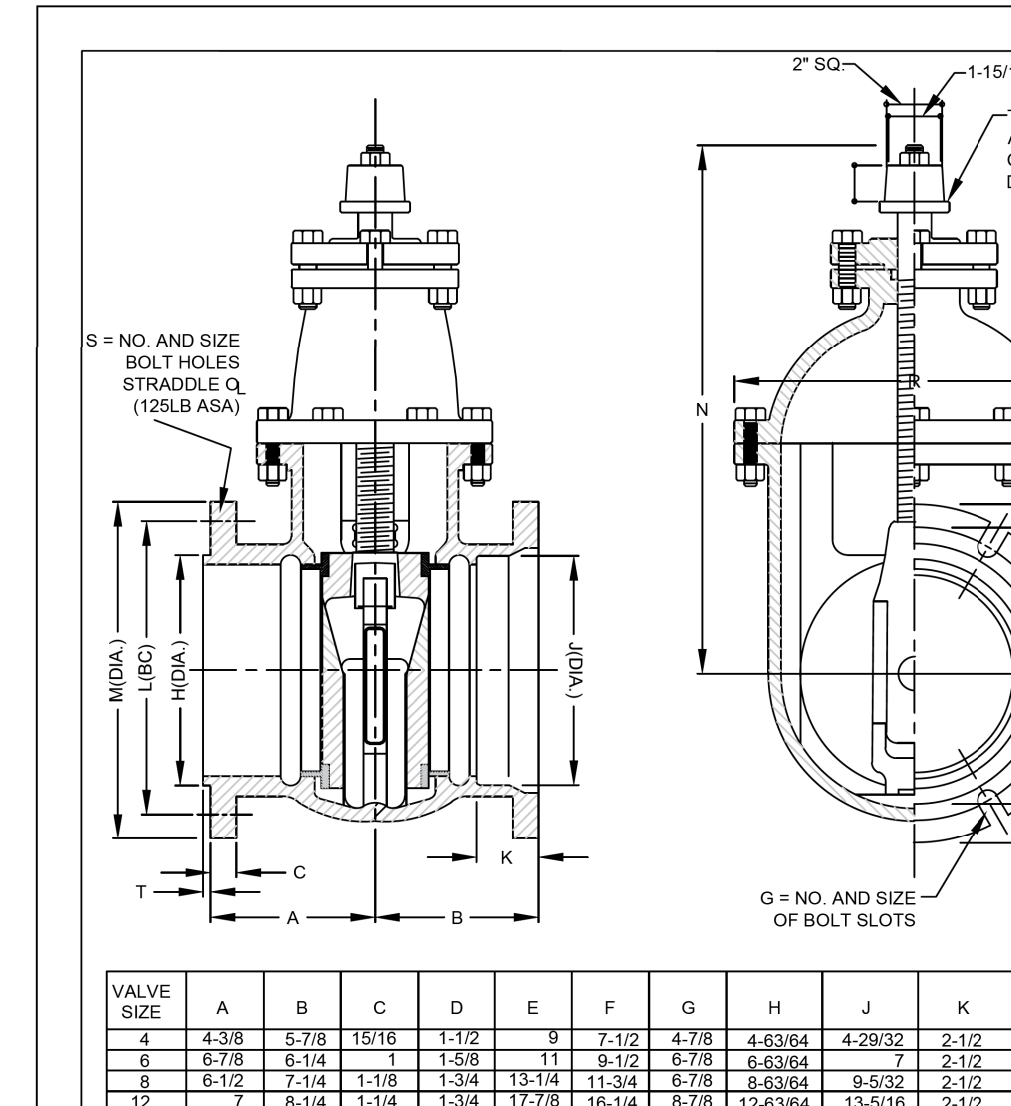
NO.	DATE	REVISION
1	07/11	REVISED NOTES AND ADDED NOTE 6
2	07/01/16	ADDED NOTE 6
3	01/01/18	ADDED NOTES 6, 8



- VALVE BOX SHALL BE 3 PART SLIP-TYPE MANUFACTURED BY SIGMA CORPORATION (04-00), OR APPROVED EQUAL.
- VALVE BOX SHALL BE 3-PIECE CLOSE GRAINED CAST IRON SLIP-TYPE VALVE BOX WITH A MINIMUM THICKNESS OF 3/16".
- VALVE BOX SHALL HAVE RAISED LETTERS "WATER" CAST INTO COVER.
- VALVE BOX SHALL HAVE 3/8" HOLE DRILLED IN TOP SECTION THRU WHICH A 1/4"x1/2" GALVANIZED BOLT SHALL BE USED TO SECURE A MINIMUM 12 GAUGE, SINGLE STRAND, COATED COPPER OR COPPER CLAD STEEL TRACER WIRE FOR NON-FERROUS PIPE. A 1/2" WASHER SHALL BE USED BETWEEN NUT AND INSIDE OF BOX. TIGHTEN HAND TIGHT.
- SCREW TYPE VALVE BOXES ARE NOT ACCEPTABLE.
- DIMENSIONS SHOWN VARY BASED UPON THE MANUFACTURER. ACTUAL DIMENSIONS SHALL BE APPROVED BY FAYETTEVILLE.
- VALVE BOX SECTIONS ARE REQUIRED. THE USE OF PIPE IN LIEU OF VALVE BOX SECTIONS SHALL NOT BE PERMITTED.
- TRACING WIRE SHALL BE INSTALLED OUTSIDE OF BOX.
- REFER TO FAYETTEVILLE DETAIL W.6 FOR INSTALLATION REQUIREMENTS.

VALVE BOX		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.7	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

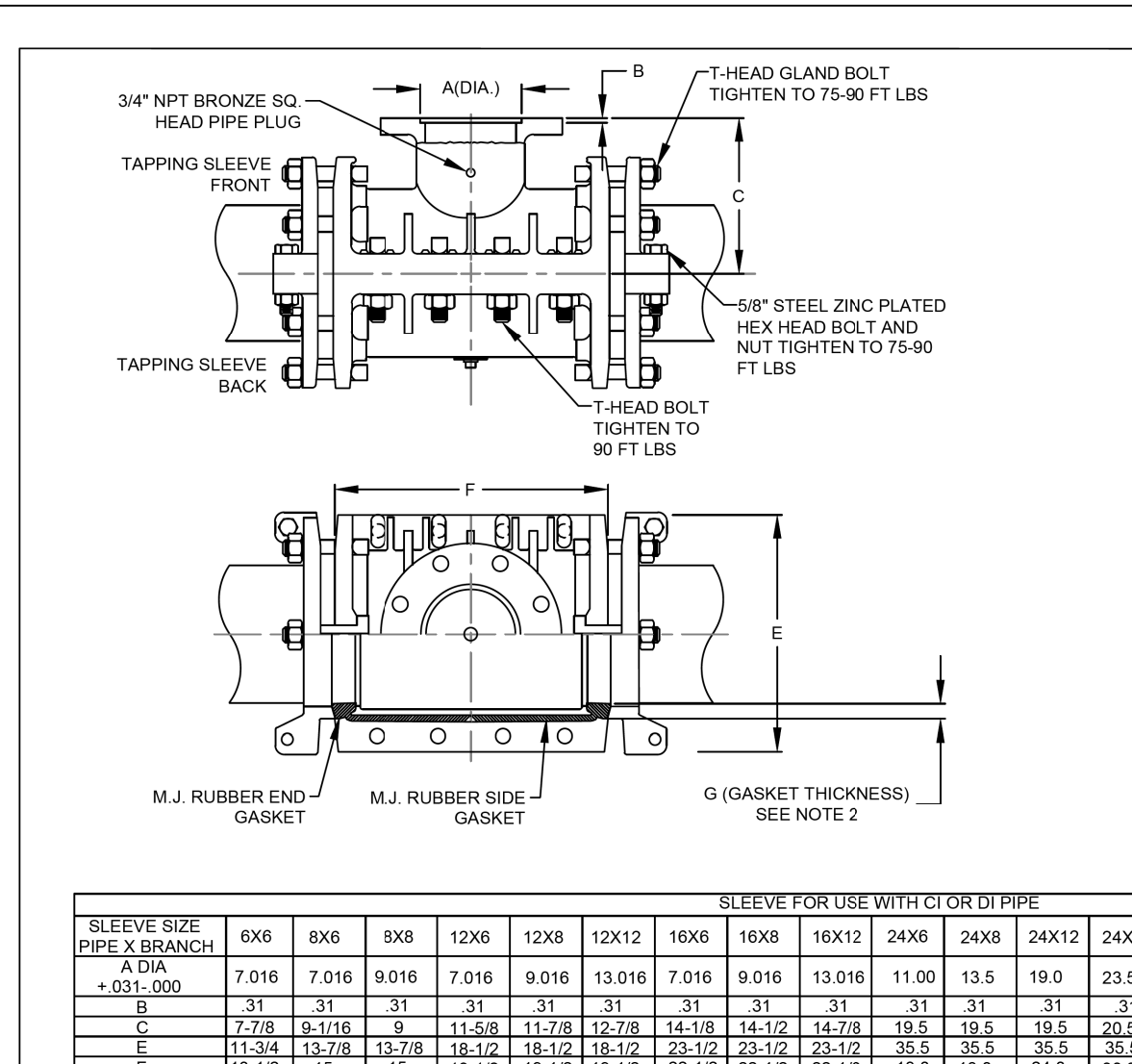
NO.	DATE	REVISION
1	07/09	ADDED NOTES 7, 8, AND CLARIFIED NOTES
2	01/14	REVISED NOTES 1, 4, 6



- ALL MATERIALS SHALL BE IN ACCORDANCE WITH FAYETTEVILLE STANDARDS.
- RAISED MALE FACE SHALL BE REQUIRED TO PROVIDE FOR PROPER ALIGNMENT OF THE TAPPING SLEEVE.
- ALL VALVES SHALL HAVE 2" SQUARE OPERATING NUT AND SHALL OPEN COUNTERCLOCKWISE.
- RESILIENT WEDGE GATE VALVE SHALL BE AS MANUFACTURED BY MUELLER CORP., AMERICAN DARLING, CLOW CORP., OR APPROVED EQUAL.
- VALVE BODY, BONNET, AND GATE SHALL BE IN ACCORDANCE WITH AWWA C-509/C-515 AND NSF61.
- VALVE BODY AND BONNET SHALL BE COATED ON ALL INTERIOR AND EXTERIOR SURFACES WITH A FUSION BONDED EPOXY IN ACCORDANCE WITH AWWA C-509-90.
- SEE TAPPING SLEEVE (DETAIL W.10 OR W.11) FOR ADDITIONAL INFORMATION.
- DIMENSIONS SHOWN ARE FOR REFERENCE AND MAY VARY BASED UPON MANUFACTURER. SLEEVES SHALL BE SIMILAR IN NATURE TO THAT SHOWN AND SHALL NOT DEVIATE IN ESSENTIAL DETAILS.
- ALL TAPPING SLEEVES SHALL BE HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH FAYETTEVILLE SPECIFICATIONS. TEST SHALL BE WITNESSED AND APPROVED BY FAYETTEVILLE PROJECT COORDINATOR PRIOR TO BEGINNING TAPPING PROCESS.

TAPPING VALVE		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.9	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

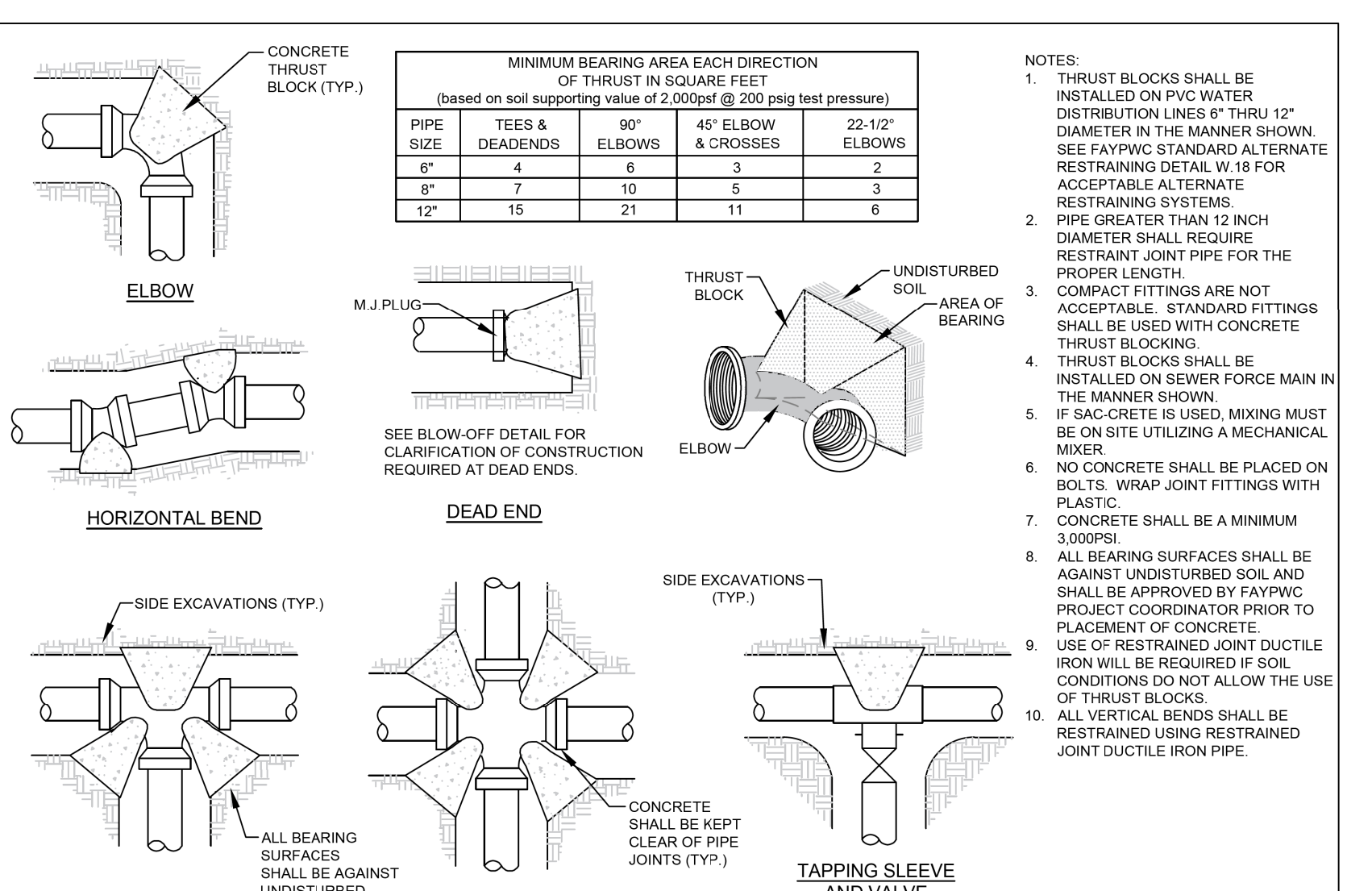
NO.	DATE	REVISION
1	07/09	ADDED NOTE 10, REVISED 4 AND 5
2	07/13	REVISED NOTES 4, 8, 10



- ALL MATERIALS SHALL BE IN ACCORDANCE WITH FAYETTEVILLE STANDARDS. SLEEVE BODY SHALL BE DUCTILE IRON ASTM A536.
- MECHANICAL JOINT TAPPING SLEEVES SHALL BE AS MANUFACTURED BY CLOW, M & H, MUELLER, OR AMERICAN AND SHALL BE FURNISHED WITH SPLIT FLANGES, SPLIT END GASKET, BOLTS, ETC. THE OUTLET FLANGE SHALL BE CL 125 PER ANSI B16.1 COMPATIBLE WITH APPROVED TAPPING VALVES.
- DIMENSIONS SHOWN ARE FOR REFERENCE AND MAY VARY BASED UPON MANUFACTURER. SLEEVES SHALL BE SIMILAR IN NATURE TO THAT SHOWN AND SHALL NOT DEVIATE IN ESSENTIAL DETAILS.
- PIPE SURFACES SHALL BE CLEANED THOROUGHLY TO PERMIT FOR A GOOD SEAL PRIOR TO INSTALLATION.
- EXTERIOR OF TAPPING SLEEVE SHALL BE COATED WITH 2 COATS ASPHALTIC VARNISH MIL-4040.
- ALL TAPPING SLEEVES SHALL BE HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH FAYETTEVILLE SPECIFICATIONS. TEST SHALL BE WITNESSED AND APPROVED BY FAYETTEVILLE PROJECT COORDINATOR PRIOR TO BEGINNING TAPPING PROCESS.
- SEE DETAILS W.9 AND W.17 FOR ADDITIONAL REQUIREMENTS.

DUCTILE IRON TAPPING SLEEVE		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.10	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

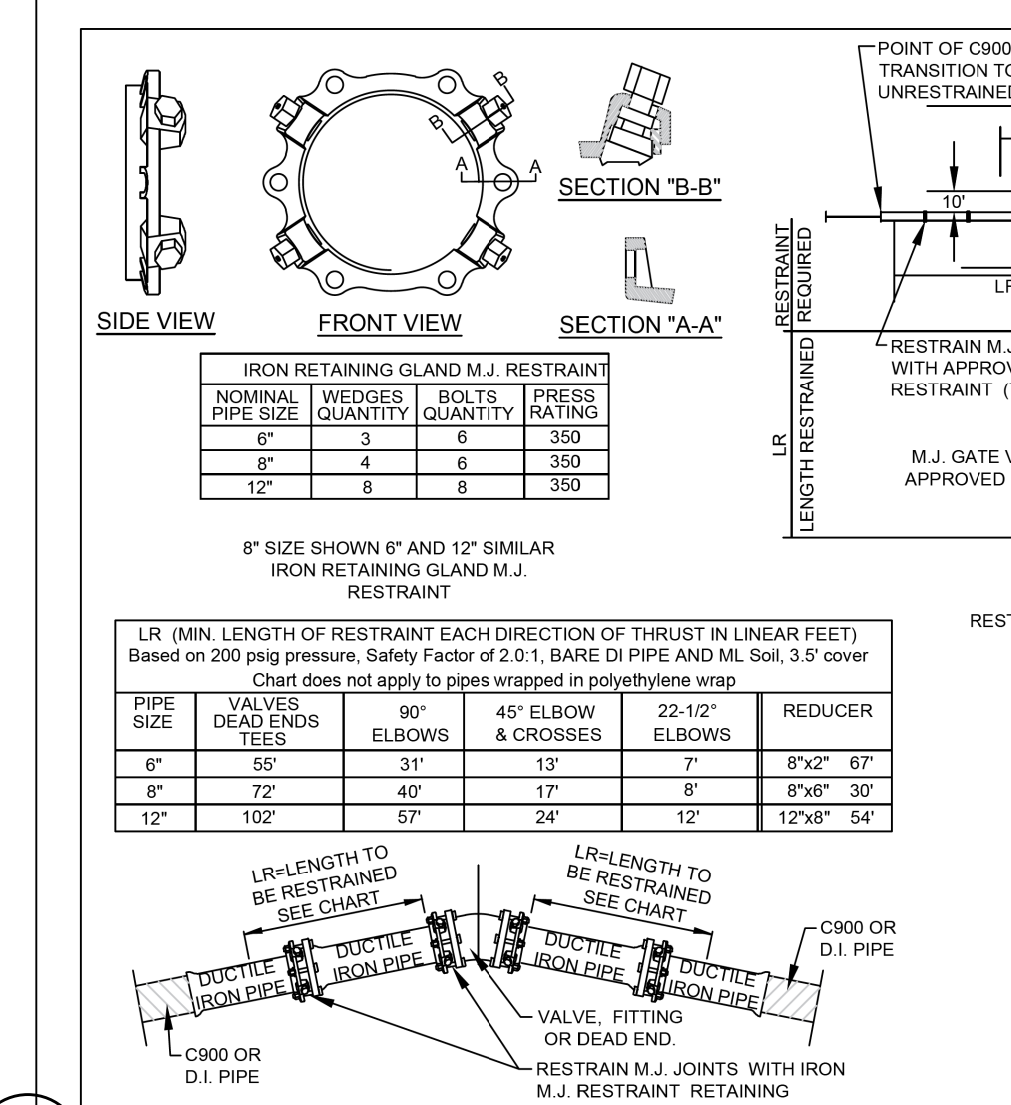
NO.	DATE	REVISION
1	07/09	REVISED NOTE 6/REMOVED NOTE 8
2	07/13	REVISED NOTES 6, 7



- THRUST BLOCKS SHALL BE INSTALLED ON PVC WATER DISTRIBUTION LINES 8" THRU 12" DIAMETER IN THE MANNER SHOWN. SEE FAYETTEVILLE STANDARD ALTERNATE RESTRAINING DETAIL, W.18 FOR ACCEPTABLE ALTERNATE RESTRAINING SYSTEMS.
- PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINT JOINT PIPE FOR THE PROPER LENGTH.
- COMPACT FITTINGS ARE NOT ACCEPTABLE. STANDARD FITTINGS SHALL BE USED WITH CONCRETE THRUST BLOCKING.
- THRUST BLOCKS SHALL BE INSTALLED ON SEWER FORCE MAIN IN THE MANNER SHOWN. IF SAC-CRETE IS USED, MIXING MUST BE ON SITE UTILIZING A MECHANICAL MIXER.
- NO CONCRETE SHALL BE PLACED ON BOLTS. WRAP JOINT FITTINGS WITH PLASTIC.
- CONCRETE SHALL BE A MINIMUM 3,000 PSI.
- ALL BEARING SURFACES SHALL BE AGAINST UNDISTURBED SOIL AND SHALL BE APPROVED BY FAYETTEVILLE PROJECT COORDINATOR PRIOR TO PLACEMENT.
- USE OF RESTRAINED JOINT DUCTILE IRON WILL BE REQUIRED IF SOIL CONDITIONS DO NOT ALLOW THE USE OF THRUST BLOCKS.
- ALL VERTICAL BENDS SHALL BE RESTRAINED USING RESTRAINED JOINT DUCTILE IRON PIPE.

CONCRETE THRUST BLOCK DETAIL		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.17	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

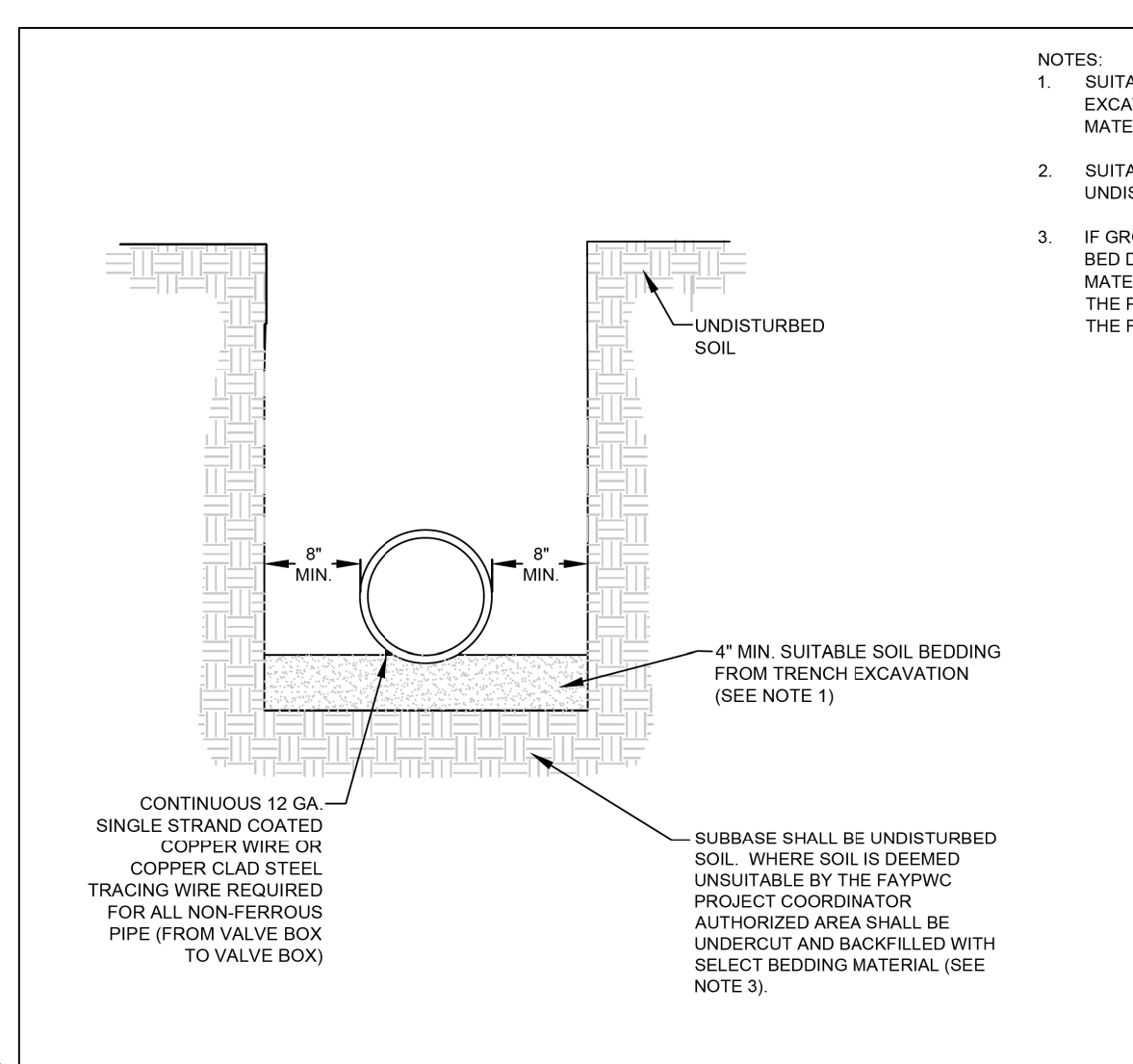
NO.	DATE	REVISION
1	09/05	REVISED TABLE
2	02/07	ADDED NOTES 8 AND 10
3	07/13	ADDED TAPPING SLEEVE AND VALVE DETAIL



- THRUST RESTRAINT SHALL BE INSTALLED ON DUCTILE IRON WATER DISTRIBUTION LINES 8" THRU 12" DIAMETER IN THE MANNER SHOWN. SEE FAYETTEVILLE STANDARD THRUST BLOCK DETAIL, W.17 FOR PVC RESTRAINT.
- IRON RETAINING GLAND M.J. RESTRAINT OR OTHER FORMS OF IRON RESTRAINT SHALL NOT BE USED ON PVC PIPE.
- PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINT JOINT PIPE FOR THE PROPER LENGTH.
- COMPACT FITTINGS ARE ACCEPTABLE FOR USE WITH IRON RETAINING GLAND M.J. RESTRAINT AND OTHER FORMS OF D.I. RESTRAINT.
- THE MINIMUM LENGTH OF RESTRAINT INDICATED SHALL REQUIRE ALL JOINTS WITHIN THE RESTRAINT TO BE RESTRAINED.
- RESTRAINT SYSTEMS MAY VARY BASED UPON THE MANUFACTURER. RESTRAINT SYSTEMS SHALL BE APPROVED BY THE FAYETTEVILLE PROJECT COORDINATOR PRIOR TO BEGINNING TAPPING PROCESS.
- GRIPPER RING AND FIELD LOK GASKETS ARE AN ACCEPTABLE METHOD OF RESTRAINT ON DUCTILE IRON PIPE ONLY.

ALTERNATE RESTRAINT DETAIL (DUCTILE IRON PIPE ONLY)		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.18	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

NO.	DATE	REVISION
1	11/8/07	REVISED TABLE, ADDED NOTE 8



- SUITABLE SOIL BEDDING IS DEFINED AS "NATIVE" SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
- SUITABLE BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS.
- IF GROUND CONDITIONS WARRANT, IT MAY BE NECESSARY TO BED DUCTILE IRON WATER MAINS IN SELECT BEDDING MATERIAL (NO. 5 OR NO. 57) STONE TO THE SPRINGLINE OF THE PIPE. SUCH INSTALLATION SHALL BE AS APPROVED BY THE FAYETTEVILLE PROJECT COORDINATOR.

WATER MAIN BEDDING DETAIL		FAYETTEVILLE PUBLIC WORKS COMMISSION	
N.T.S.		FAYETTEVILLE, N.C.	
DWG. NO.	DWG. BY:	WATER RESOURCES ENGINEERING DEPARTMENT	
W.19	FAYPCW		
DATE: JAN 01, 2021	APPROVED BY: J.E.G.		

NO.	DATE	REVISION
1	01/01/17	REVISED NOTES
2	07/01/13	REVISED NOTE RE: TRACER WIRE

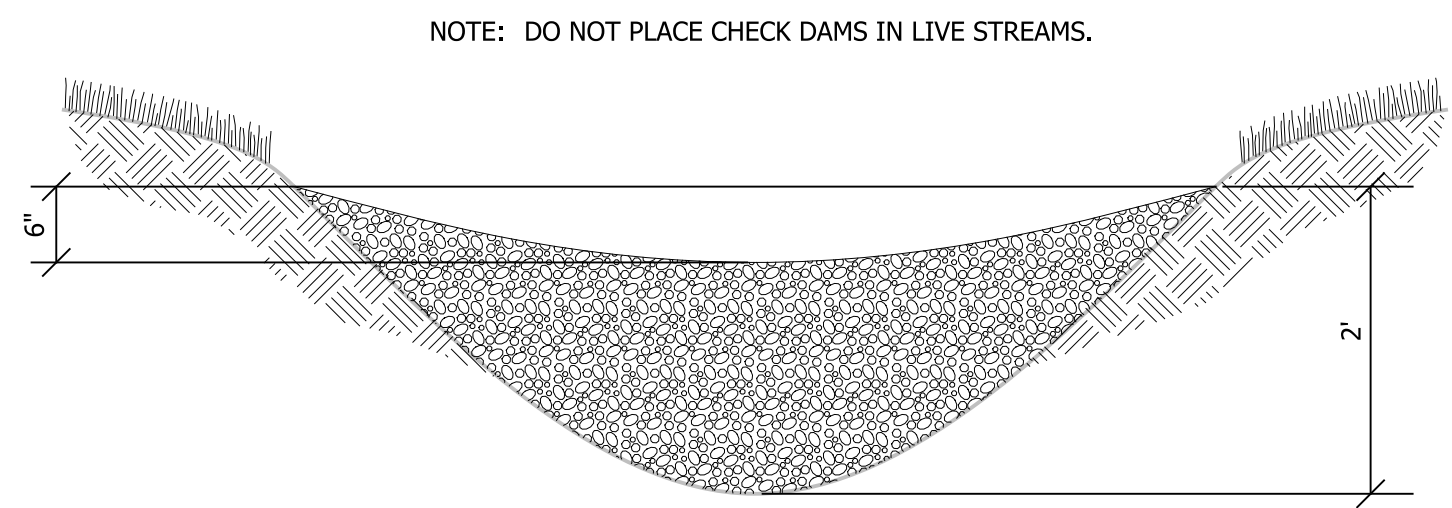
BUCKHEAD / FERNCREEK DR
WATERLINE LOOPING
STANDARD DETAILS

Wooten
FAYETTEVILLE PUBLIC WORKS COMMISSION
WATER RESOURCES ENGINEERING
P.O. Box 1085, Fayetteville, NC 28302
855 Old Wilmington Road, Fayetteville, NC 28301

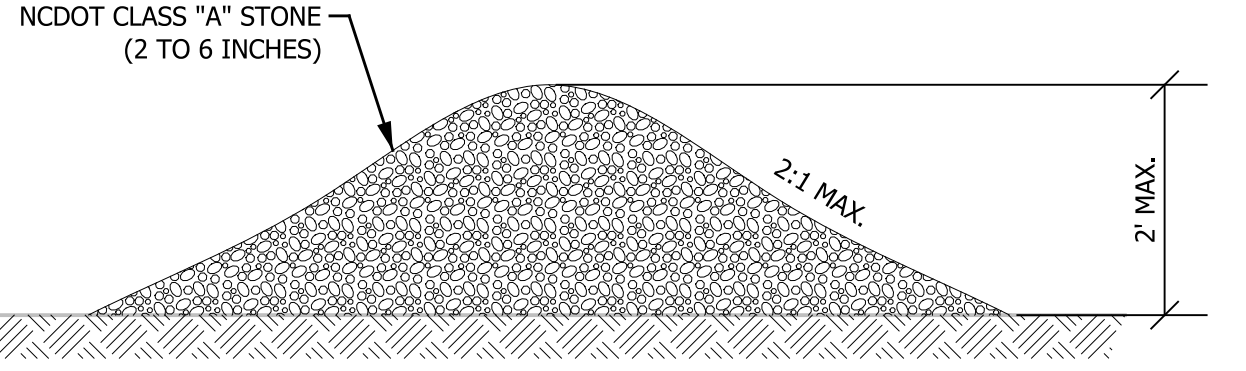
300 S. Main Street • Winston-Salem, NC 27101
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License Number: F-F-0115

DATE: APRIL 2019
SURVEY/GPS BY: TWC
DRAWN BY: CGL
CHECKED BY: JCG
SCALE: AS NOTED
SHEET NUMBER: 4 OF 6

1
D2

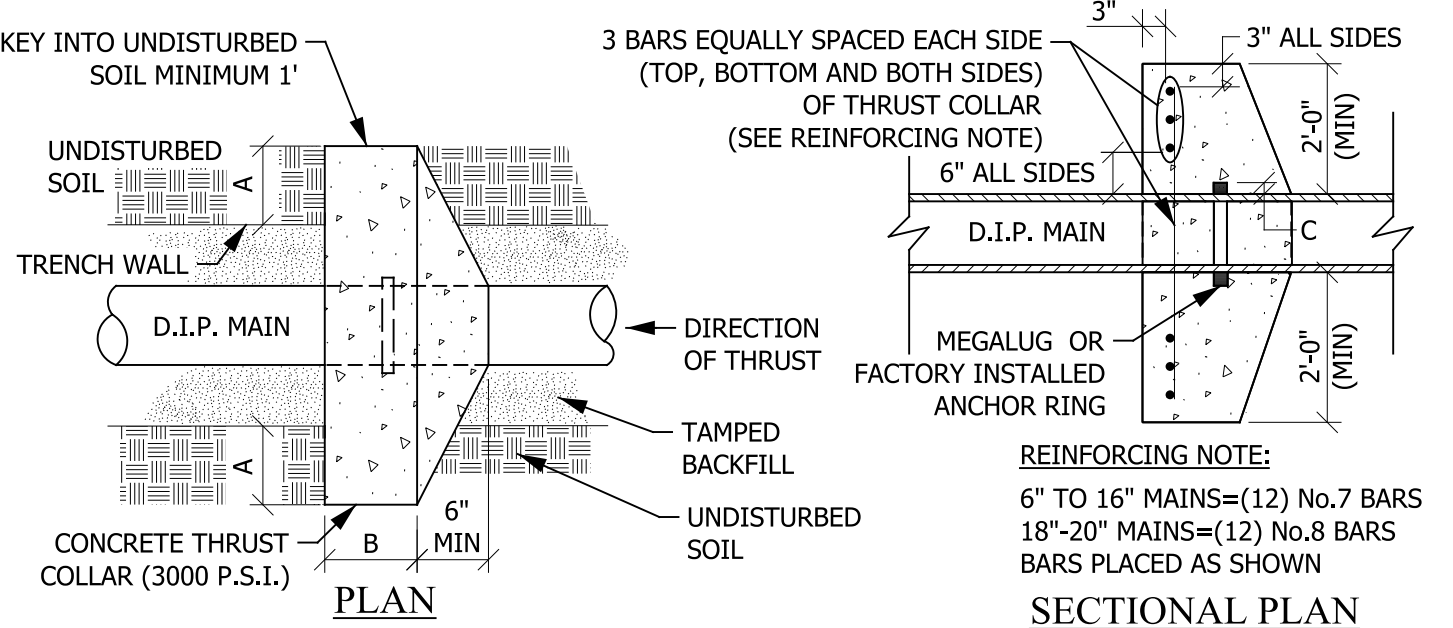


ELEVATION



SECTION

2 ROCK CHECK DAM
NOT TO SCALE

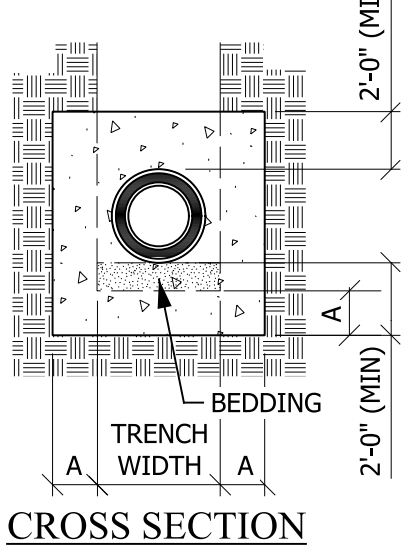


PLAN

REINFORCING NOTE:
6" TO 16" MAINS=(12) No.7 BARS
18"-20" MAINS=(12) No.8 BARS
BARS PLACED AS SHOWN

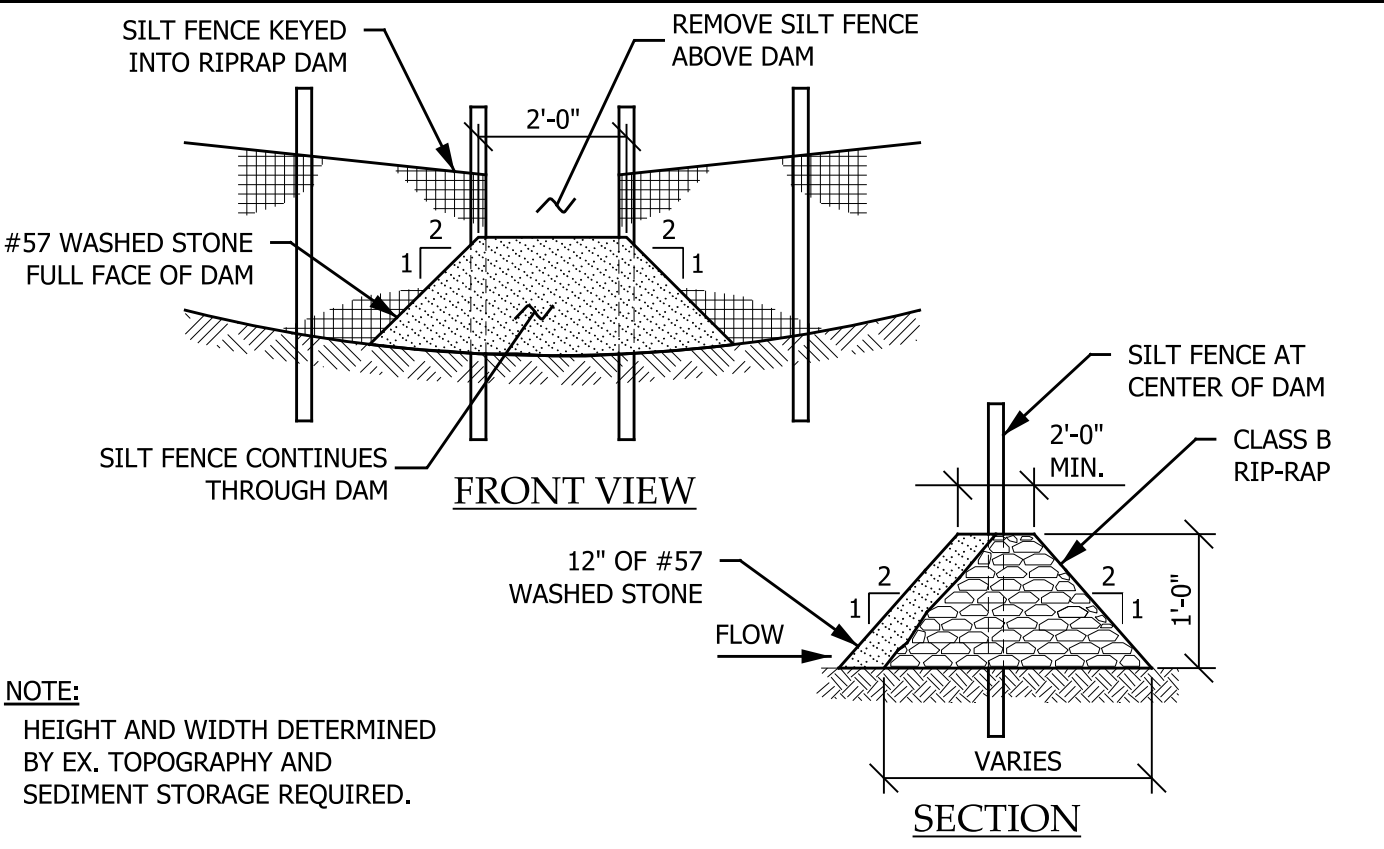
PIPE DIA.	CONCRETE THRUST COLLAR	ANCHOR RING	RINGS REQUIRED
6"-12"	1'-0"	1'-0"	2"
16"	1'-4"	1'-0"	2"
18"-20"	2'-6"	1'-0"	3"

3 THRUST COLLAR
NOT TO SCALE



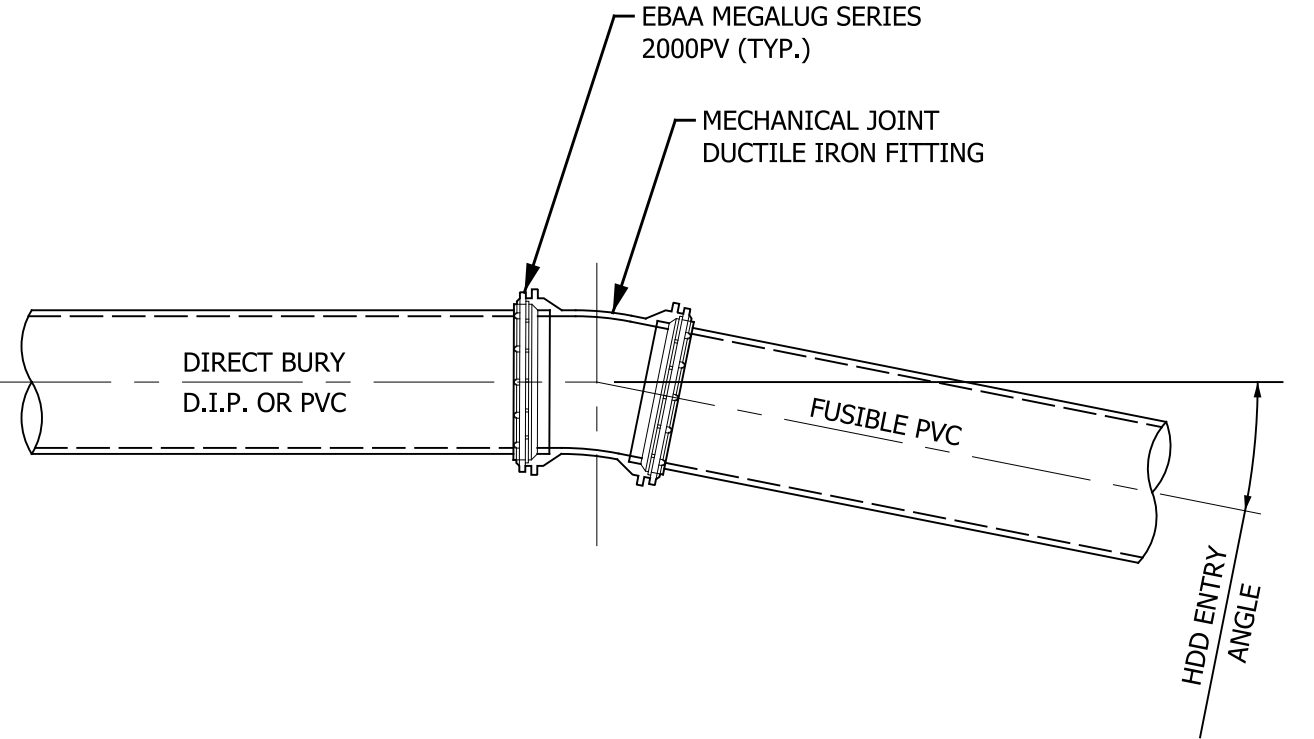
CROSS SECTION

4
D2



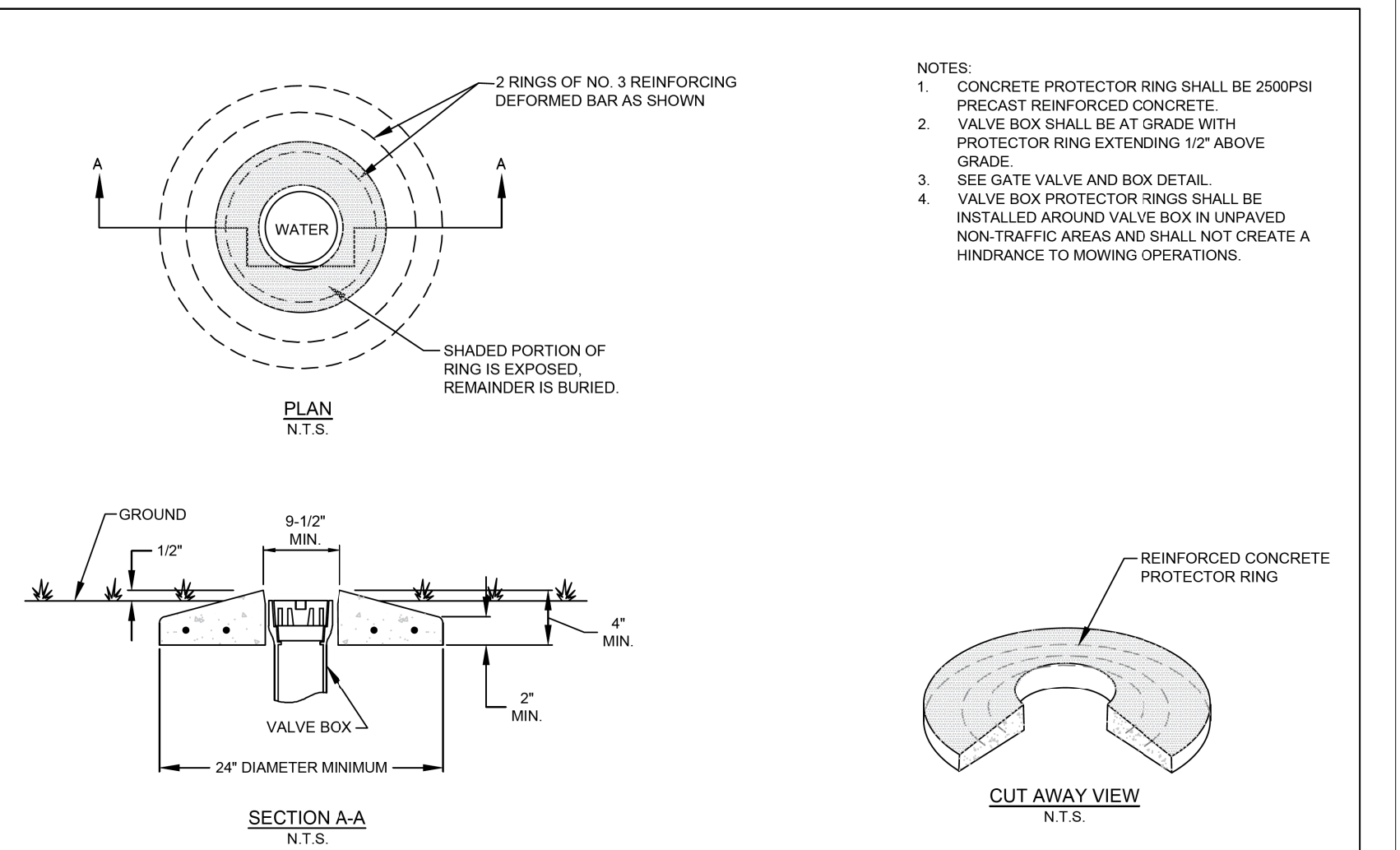
5 SILT FENCE OUTLET
NOT TO SCALE

- MAINTENANCE:**
- INSPECT STONE OUTLETS AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. CHECK THE STRUCTURE FOR EROSION, PIPING, AND ROC DISPLACEMENT. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
 - REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN.
 - REMOVE STONE OUTLET AND UNSTABLE SEDIMENT DEPOSITS AND BRING AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



6 CONNECTION DETAIL - DUCTILE IRON PIPE TO FUSIBLE PVC HDD
NOT TO SCALE

7
D2



PLAN N.T.S.

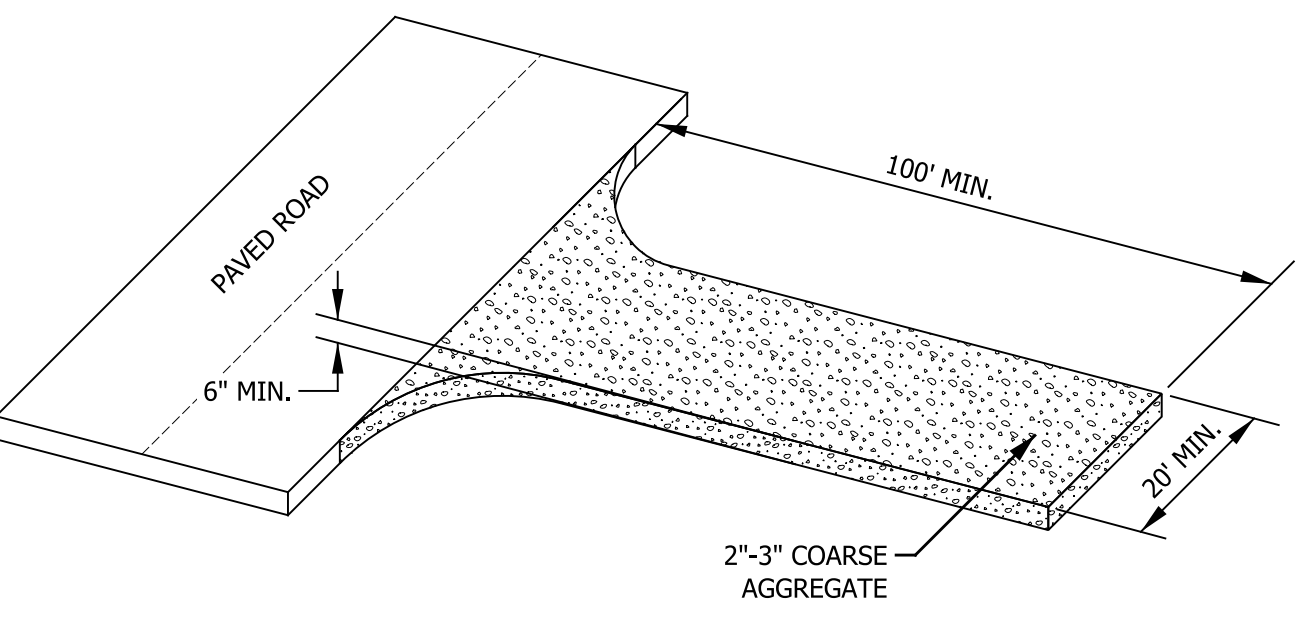
SECTION A-A N.T.S.

CUT AWAY VIEW N.T.S.

VALVE BOX PROTECTOR RING N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
DWG. NO. W.8		DWG. BY: FAYPWC				
DATE: JAN. 01, 2021		APPROVED BY: J.E.G.		WATER RESOURCES ENGINEERING DEPARTMENT		

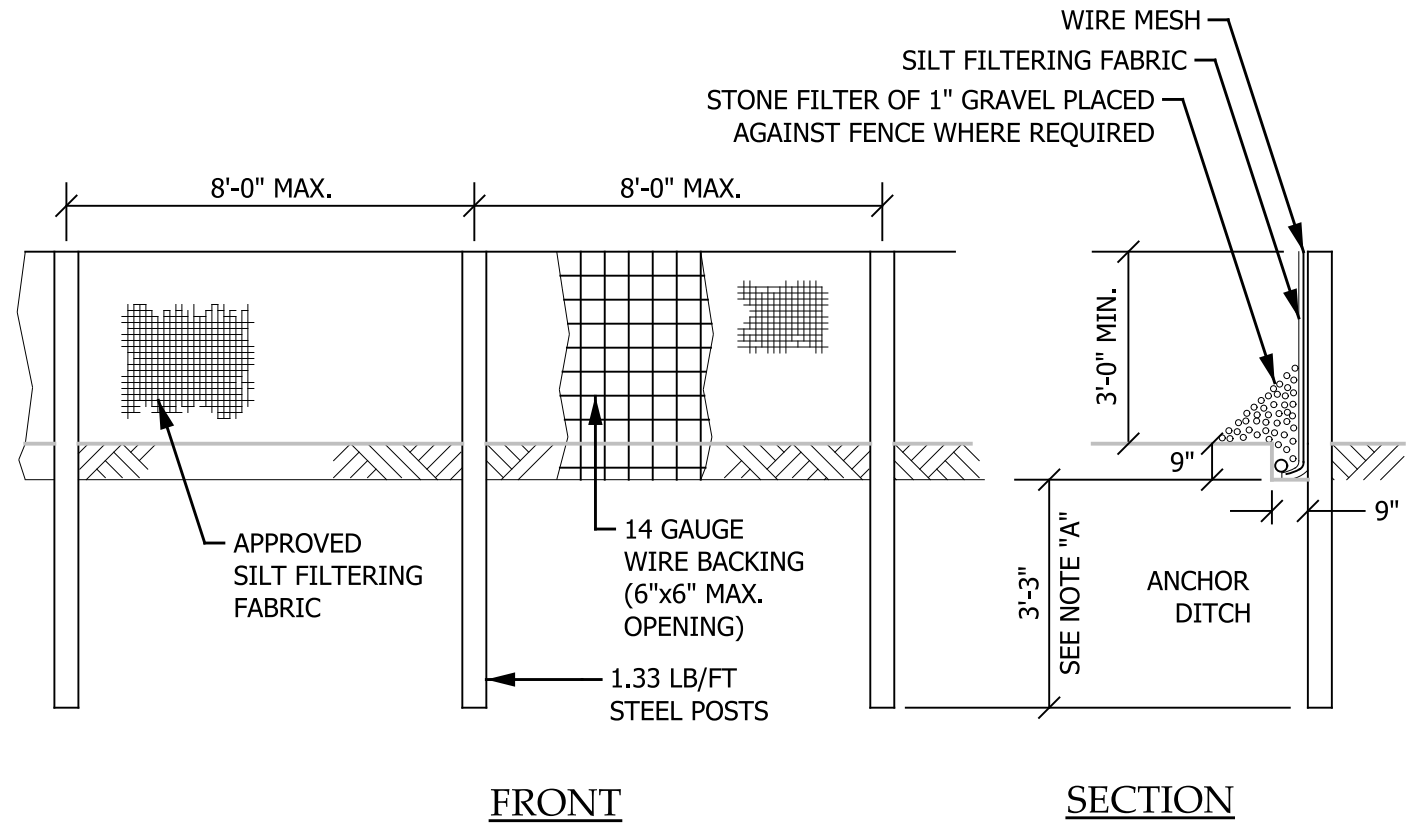
WB-CONC-PROTECTOR-RING.dwg

8 TEMPORARY CONSTRUCTION ENTRANCE
NOT TO SCALE



- NOTE:**
- ENTRANCE APPLICABLE AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED.
 - CONSTRUCTION ENTRANCE SHALL BE PLACED FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.
 - PERIODIC TOP DRESSING AND ROUTINE MAINTENANCE SHALL BE PROVIDED ON ENTRANCE AS REQUIRED. CONTRACTOR SHALL STOCKPILE FRESH STONE ON SITE.
 - ANY MATERIAL THAT MAKES IT TO EXISTING PUBLIC ROADWAY SHALL BE REMOVED AND CLEANED IMMEDIATELY.

9 SILT FENCE
NOT TO SCALE



FRONT

SECTION

- NOTES:**
- POSTS SET AT DEPTHS OF 4' FOR EARTH BACKFILL. ANCHOR DITCH IS 9"x9" AND FILL IS TO BE COMPACTED.
 - PROVIDE ADEQUATE EXCAVATION AHEAD OF SILT FENCE TO ACT AS A VELOCITY BREAK AND SILT TRAP.
 - CONTRACTOR MAY USE ALTERNATE MATERIAL OR METHOD UPON APPROVAL FROM ENGINEER.

John C. Grey
ENGINEER
1873/30/28

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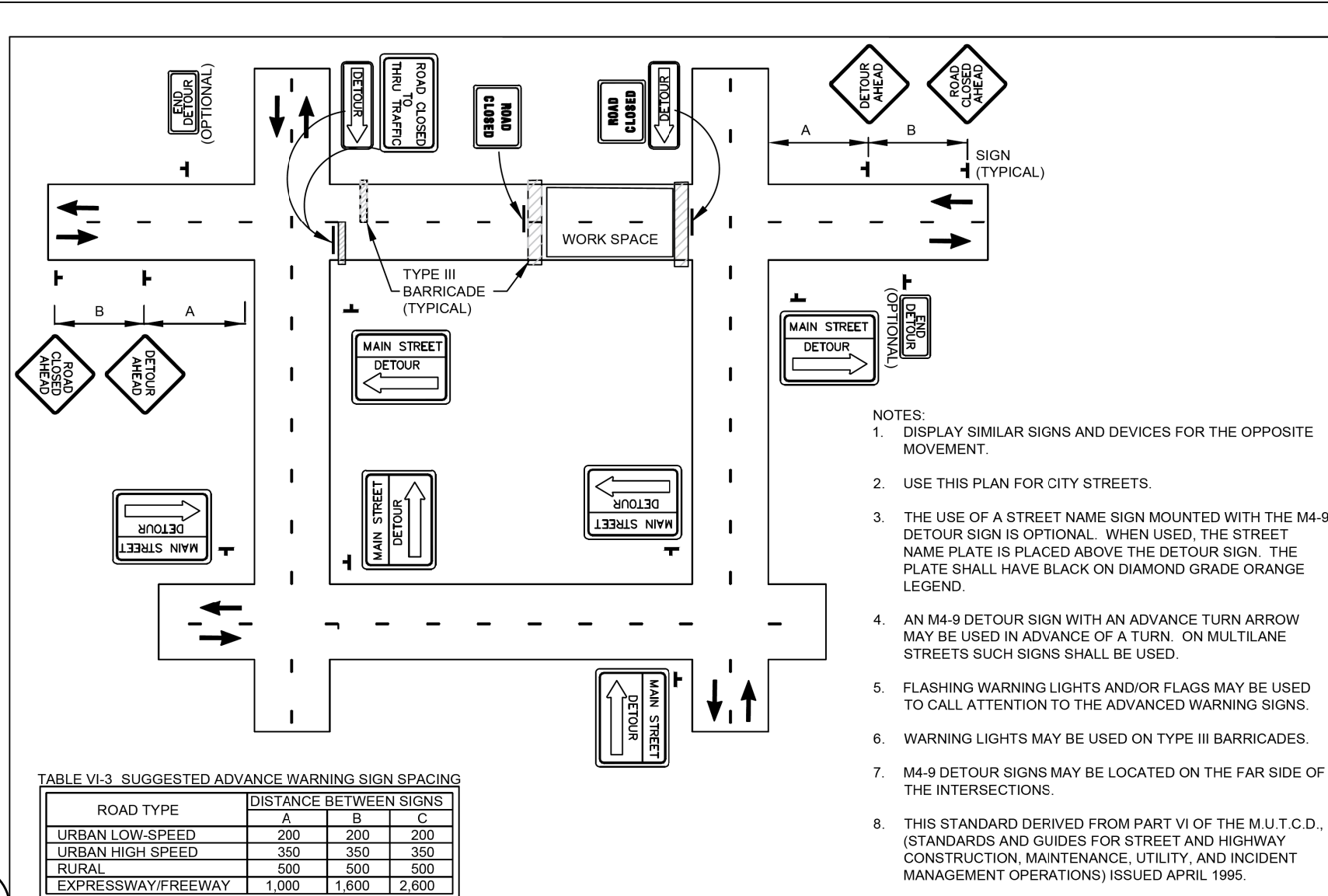
FAYETTEVILLE
PUBLIC WORKS COMMISSION
FPMC WATER RESOURCES ENGINEERING
P.O. Box 1085, Fayetteville, NC 28302
855 Old Wilmington Road, Fayetteville, NC 28301

DATE:	APRIL 2019	DATE:	06/24/2021
SURVEY/GPS BY:	MH	PER FAYPWC REVIEW	CMG
DRAWN BY:	JCG	COMMENTS & ALTERNATE HDD DESIGN	
CHECKED BY:	JCG		
SCALE:	AS NOTED		

D2
5 OF 6

REVISIONS

SHEET SERIES:



- NOTES:
1. DISPLAY SIMILAR SIGNS AND DEVICES FOR THE OPPOSITE MOVEMENT.
 2. USE THIS PLAN FOR CITY STREETS.
 3. THE USE OF A STREET NAME SIGN MOUNTED WITH THE M4-9 DETOUR SIGN IS OPTIONAL. WHEN USED, THE STREET NAME PLATE IS PLACED ABOVE THE DETOUR SIGN. THE PLATE SHALL HAVE BLACK ON DIAMOND GRADE ORANGE LEGEND.
 4. AN M4-9 DETOUR SIGN WITH AN ADVANCE TURN ARROW MAY BE USED IN ADVANCE OF A TURN. ON MULTILANE STREETS SUCH SIGNS SHALL BE USED.
 5. FLASHING WARNING LIGHTS AND/OR FLAGS MAY BE USED TO CALL ATTENTION TO THE ADVANCED WARNING SIGNS.
 6. WARNING LIGHTS MAY BE USED ON TYPE III BARRICADES.
 7. M4-9 DETOUR SIGNS MAY BE LOCATED ON THE FAR SIDE OF THE INTERSECTIONS.
 8. THIS STANDARD DERIVED FROM PART VI OF THE MUTCD, (STANDARDS AND GUIDES FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND INCIDENT MANAGEMENT OPERATIONS) ISSUED APRIL 1995.

ROAD TYPE	A	B	C
URBAN LOW-SPEED	200	200	200
URBAN HIGH-SPEED	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1,000	1,000	2,600

FIGURE TA-20
DETOUR FOR CLOSED STREET

FAYETTEVILLE
PUBLIC WORKS COMMISSION
FAYETTEVILLE, N.C.

NO. DATE REVISION

1 01/05 ADDED PHONE NUMBERS

DATE: JAN. 01, 2021 APPROVED BY: J.E.G.

WATER RESOURCES
ENGINEERING DEPARTMENT

MT-DETOUR-ROAD-CLOSED.dwg

1. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS FOR WORK ZONE TRAFFIC CONTROL TO CITY TRAFFIC SERVICES DEPARTMENT (910-433-1600) FOR CITY STREETS AND TO MR. TROY BAKER (910-364-0611) FOR NCDOT STREETS. CONTRACTOR SHALL NOT PLACE ANY TRAFFIC CONTROL DEVICES WITHOUT HAVING APPROVAL FROM APPLICABLE TRANSPORTATION DEPARTMENT EITHER NCDOT OR THE CITY OF FAYETTEVILLE.
2. CONTRACTOR SHALL INSURE ACCESS TO ALL PROPERTIES BY PROPERTY OWNERS AT ALL TIMES.
3. CONTRACTOR SHALL NOTIFY CITY ENGINEERING OFFICE ONE WEEK IN ADVANCE OF ANY ROAD CLOSINGS AND COORDINATE ALL ROAD CLOSINGS/UTILITY INTERRUPTIONS WITH PROPERTY OWNERS AFFECTED 48 HOURS PRIOR TO CLOSING/INTERRUPTING SERVICES.
4. MINIMUM ONE-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES UNLESS ROAD CLOSURE IS APPROVED BY CITY OF FAYETTEVILLE TRAFFIC SERVICES DEPARTMENT IN WRITING, 5 DAYS IN ADVANCE OF ROAD CLOSURE. AN APPROVED DETOUR PLAN PREPARED BY THE CONTRACTOR SHALL BE REQUIRED AND THE MEASURES INSTALLED PRIOR TO CLOSURE.
5. CONTRACTOR SHALL COORDINATE/NOTIFY TRAFFIC SERVICES DAILY (BEFORE 4:00PM) AS TO WHICH STREETS WILL BE UNDER CONSTRUCTION IMPEDING TRAFFIC FLOW THE FOLLOWING DAY.
6. THE CONTRACTOR SHALL NOT IMPEDE TRAFFIC AT ANY TIME UNTIL THE APPROVED TRAFFIC CONTROL DEVICES ARE IN PLACE.
7. ALL TRAFFIC CONTROL MEASURES, DEVICES, INSTALLATION, METHODS, SEQUENCING AND PLANS SHALL BE IN STRICT ACCORDANCE WITH MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND SUPPLEMENTS SUCH AS NCDOT AND/OR CITY OF FAYETTEVILLE TRAFFIC SERVICES.

TRAFFIC CONTROL NOTES

FAYETTEVILLE
PUBLIC WORKS COMMISSION
FAYETTEVILLE, N.C.

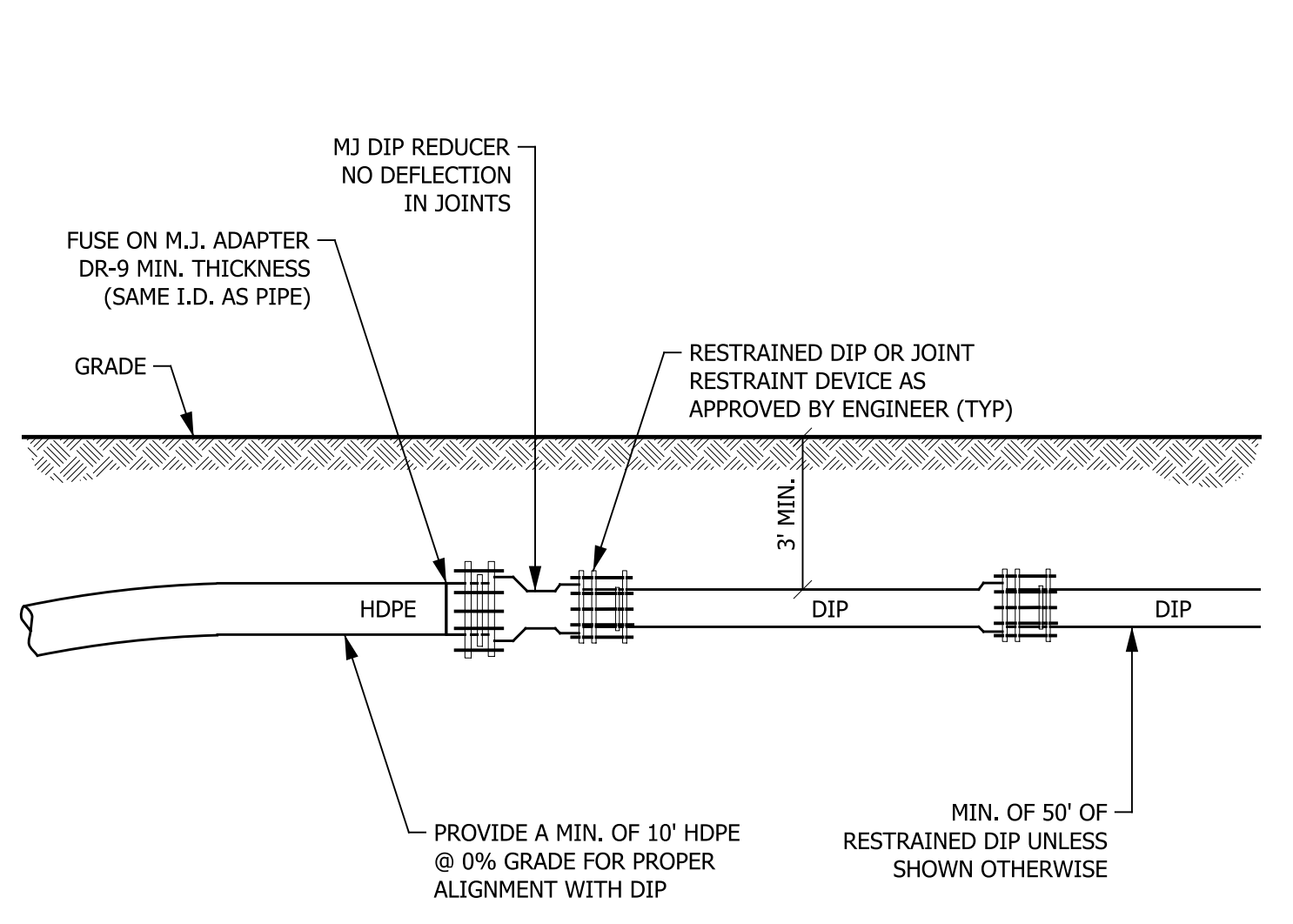
NO. DATE REVISION

1 01/05 ADDED PHONE NUMBERS

DATE: JAN. 01, 2021 APPROVED BY: J.E.G.

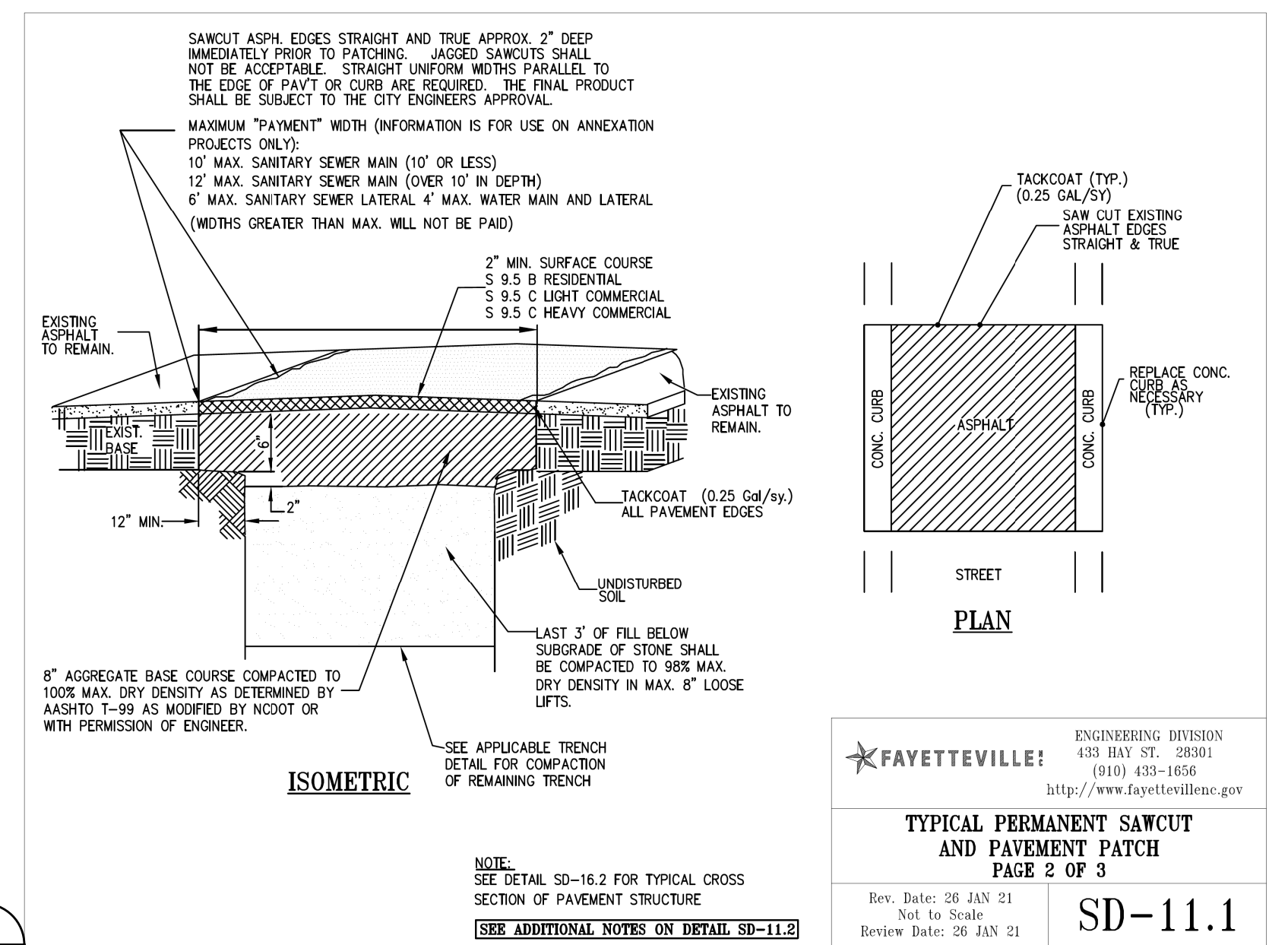
WATER RESOURCES
ENGINEERING DEPARTMENT

N4-TRAFFIC-CONTROL-NOTES.dwg



PIPELINE RESTRAINT AT HDPE/DI CONNECTION DETAIL

NOT TO SCALE

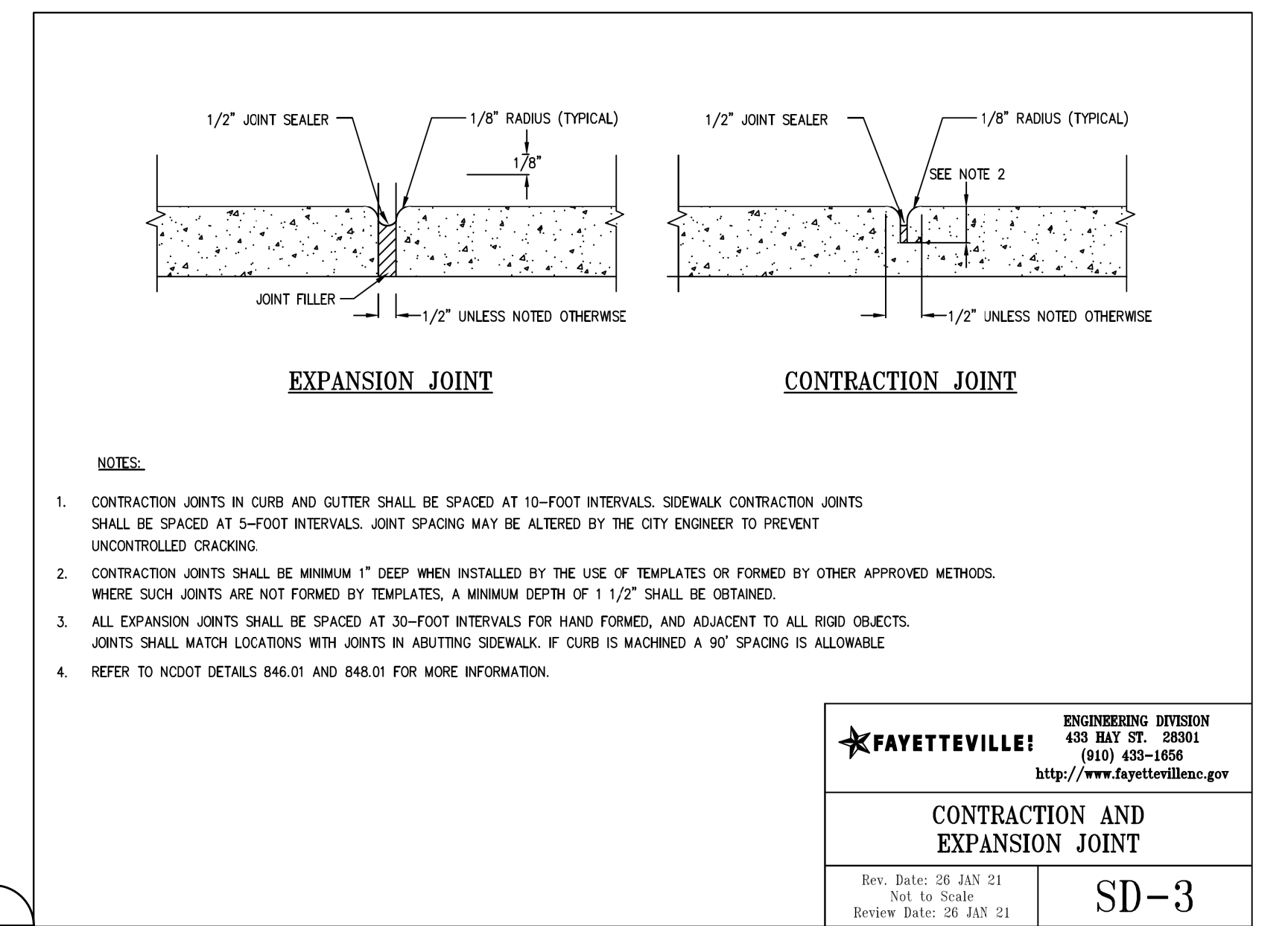


TYPICAL PERMANENT SAWCUT AND PAVEMENT PATCH
PAGE 2 OF 3

ENGINEERING DIVISION
433 HAY ST., 28301
(910) 433-1656
<http://www.fayettevilenc.gov>

Rev. Date: 26 JAN 21
Not to Scale
Review Date: 26 JAN 21

SD-11.1

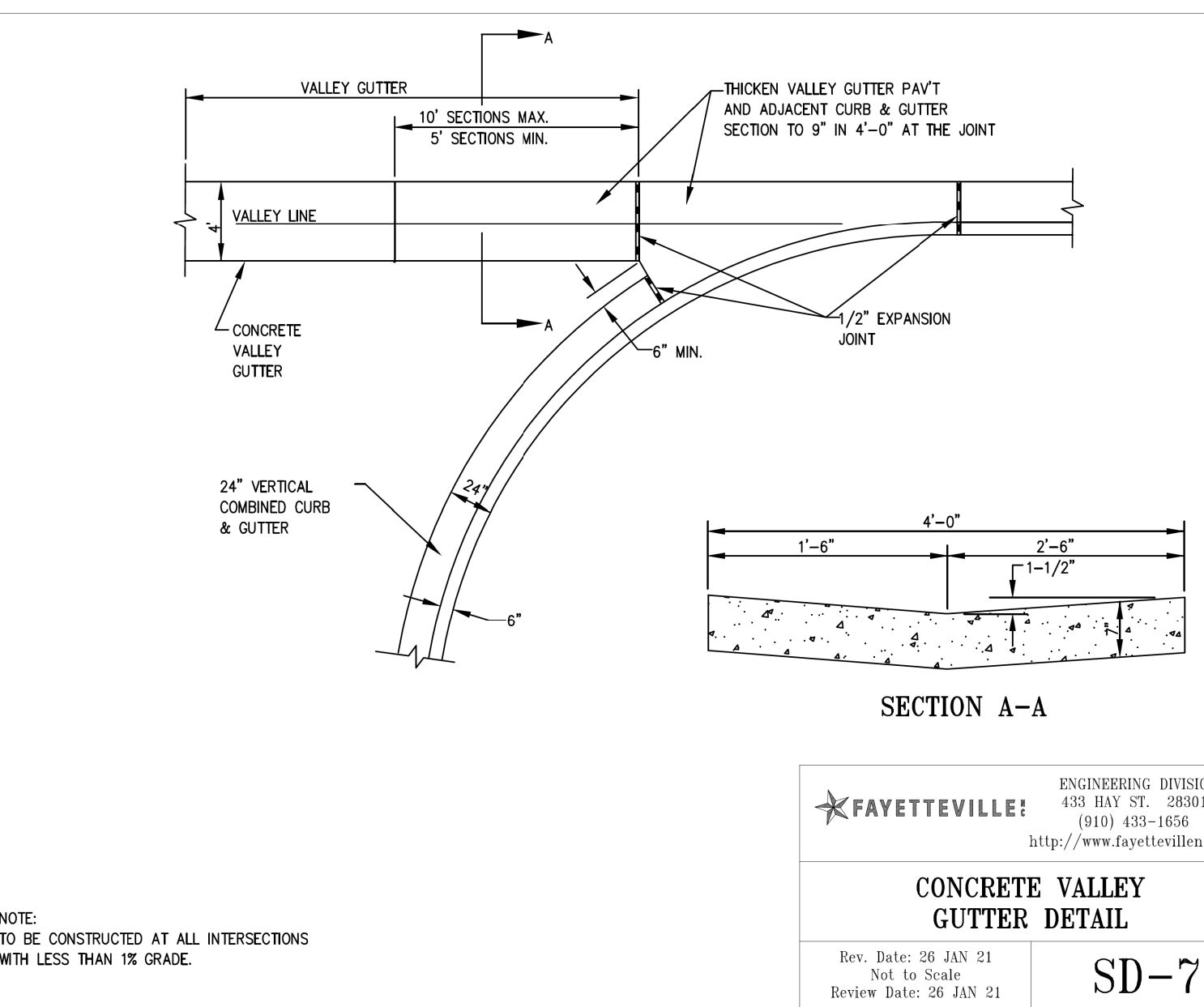


CONTRACTION AND EXPANSION JOINT

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<http://www.fayettevilenc.gov>

Rev. Date: 26 JAN 21
Not to Scale
Review Date: 26 JAN 21

SD-3



CONCRETE VALLEY GUTTER DETAIL

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Rev. Date: 26 JAN 21
Not to Scale
Review Date: 26 JAN 21

SD-7

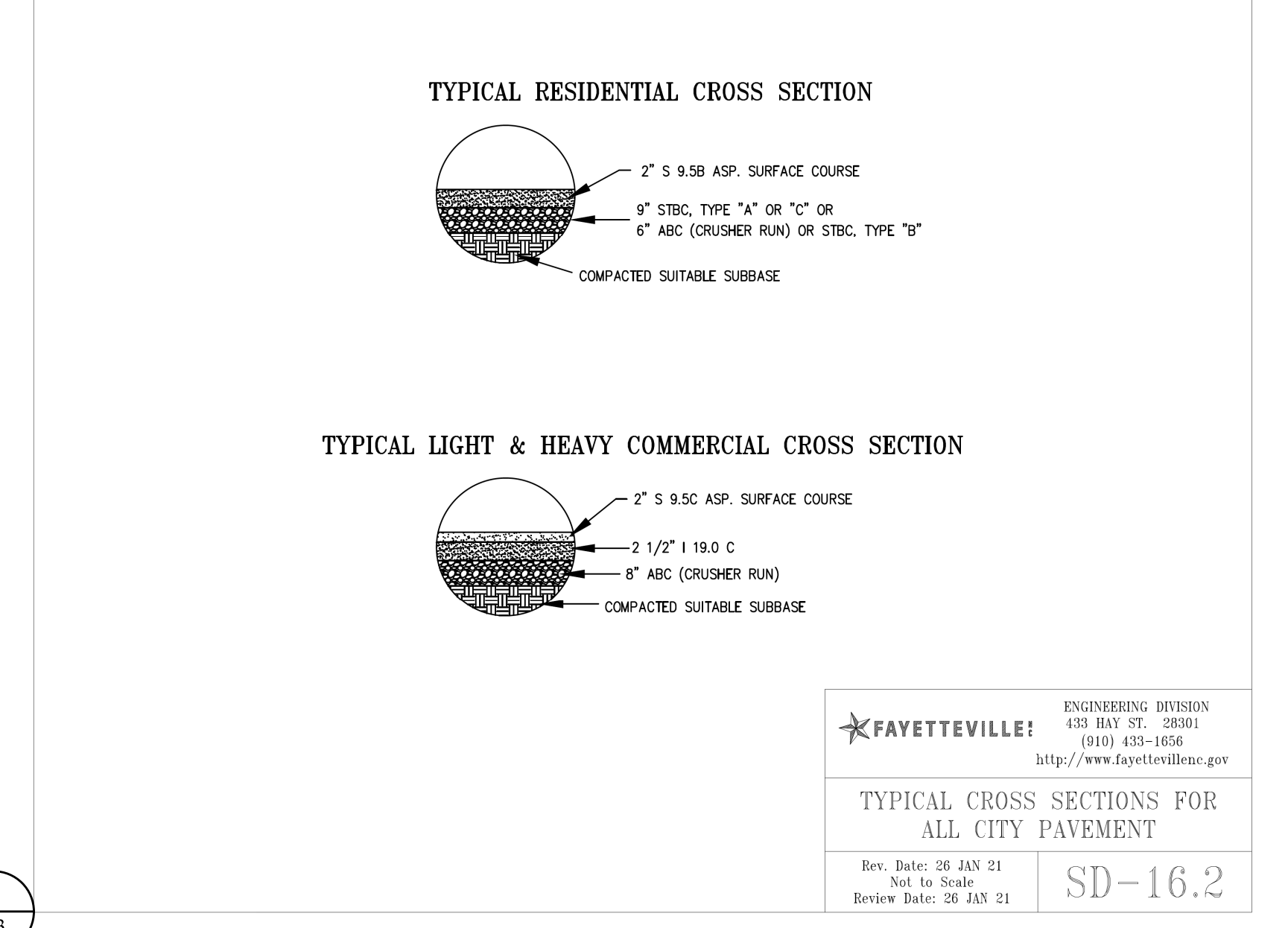
- NOTES:
1. CONTRACTOR SHALL PATCH PAVEMENT TO THE SAME PAVEMENT CROSS SECTION AS EXISTED PRIOR TO REMOVING PAVEMENT. THE STREET CROWN SHALL BE RESTORED. PATCH SHALL MATCH EXISTING PAVEMENT WITHIN .02" WHEN CHECKED WITH A 10' STRAIGHT EDGE. ADJUST PATCH AS REQUIRED. PATCH PAVING MAY OCCUR PRIOR TO PULLING MANDREL, THRU SS PROVIDED DENSITY TEST OF TRENCH BACKFILL MEET THE REQUIRED DENSITY AND ENGINEER APPROVES PATCHING STREET PRIOR TO MANDREL TESTING SANITARY SEWER MAIN.
 2. WHERE PATCH OF CURBING OCCURS CONTRACTOR SHALL MATCH EXISTING CURB GRADES WITHIN 0.02 FEET. PATCHES THAT ARE ABOVE THE CURB GRADE LINE WILL NOT BE ACCEPTABLE AND SHALL BE REMOVED AND REPAIRED AT NO EXPENSE TO THE OWNER. CURB PATCH SHALL BE THE SAME SHAPE/TEMPLATE AS THE EXISTING CURB.
 3. CONTRACTOR SHALL BE REQUIRED TO PROVIDE TRAFFIC CONTROL AND DEVICES AS REQUIRED BY THE MUTCD OR IN C. SUPPLEMENT. WORK CAN NOT PROCEED UNTIL THE MEASURES ARE IN PLACE. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT NEW PAVEMENT FROM TRAFFIC AND OTHER SOURCES OF DAMAGE UNTIL ASPHALT HAS SUFFICIENTLY COOLED TO PREVENT DAMAGE FROM SURFACE DEFLECTIONS.
 4. CONTRACTOR SHALL SAWCUT EXIST. PAVEMENT STRAIGHT AND TRUE PRIOR TO REMOVING ASPHALT FOR UTILITY INSTALLATION. THE ENGINEER MAY APPROVE THE USE OF A MILLING MACHINE FOR REMOVAL OF THE EXISTING PAVEMENT WITHIN TRENCH LIMITS. WHERE MILLING IS APPROVED THE CONTRACTOR SHALL PLACE AND COMPACT MILLINGS IN MILLED AREA TO PROVIDE AN INTERIM TRAFFIC SURFACE. MILLING WHERE APPROVED BY ENGINEER IS AN ALTERNATE TO CUTTING ASPHALT AND DISPOSING OFF-SITE.
 5. AFTER UTILITY IS INSTALLED AND TESTED AND THE EXCESS BASE MATERIAL REMOVED (APPROX. 2") CONTRACTOR SHALL AGAIN SAWCUT EXISTING PAVEMENT STRAIGHT AND TRUE IMMEDIATELY PRIOR TO PAVING AS NOTED ABOVE.
 6. MILLING OPERATIONS SHALL BE LIMITED TO 1800 FEET PER MAIN LINE CREW NOT TO EXCEED 3000 FEET IN TOTAL OF DISTURBED ROADWAY FOR THE ENTIRE PROJECT AT ONE TIME WHERE CONTRACTOR SHALL PATCH THE DISTURBED AREA OF ROADWAY PRIOR TO DISTURBING ADDITIONAL ROADWAY.
 7. AT NO TIME SHALL THE TRENCH BE LEFT UNATTENDED WITH A VERTICAL DROP GREATER THAN 1 INCH FROM ASPHALT SURFACE TO TOP OF BACKFILLED TRENCH.
 8. IF PAVEMENT SETTLEMENT OCCURS WITHIN WARRANTY PERIOD (SEE PROJECT SPECIFICATIONS), THE CONTRACTOR SHALL REPAIR AT NO ADDITIONAL EXPENSE TO THE OWNER.
 9. NCDOT WILL REQUIRE FULL DEPTH ASPHALT PATCH TO MATCH EXISTING ASPHALT THICKNESS ON STATE MAINTAINED ROADS. NCDOT REQUIRES PATCH PAVING SAME DAY AS REMOVAL.
 10. TEST FOR DENSITY OF COMPACTION MAY BE MADE AT THE OPTION OF THE ENGINEER AND DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE ENGINEER MAY HAVE COMPACTION TEST PERFORMED AFTER THE BACKFILL IS COMPLETE. CONTRACTOR SHALL BE REQUIRED TO EXCAVATE TO VARIOUS ELEVATIONS FOR DENSITY TESTING EXCAVATION, BACKFILL AND RECOMPACTION SHALL BE PERFORMED AT NO ADDITIONAL COSTS TO THE OWNER.
- NOTES 5 & 9 APPLY TO PERMANENT PAVEMENT PATCHES ONLY.

NOTES FOR TYPICAL PERMANENT AND TEMPORARY SAWCUT AND PAVEMENT PATCH
PAGE 3 OF 3

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SD-11.2



TYPICAL CROSS SECTIONS FOR ALL CITY PAVEMENT

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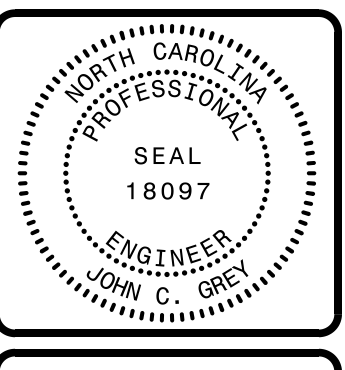
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Review Date: 26 JAN 21

SD-16.2

BY:	REVISIONS:
DATE:	DATE:
SURVEY/GPS BY:	PER FAYFWPC REVIEW COMMENTS & ALTERNATE HDD DESIGN:
DRAWN BY:	DATE:
CHECKED BY:	DATE:
SCALE:	DATE:
AS NOTED	DATE:

D3

6 OF 6



BUCKHEAD / FERNCREEK DR
WATERLINE LOOPING
STANDARD DETAILS

FAYETTEVILLE PUBLIC WORKS COMMISSION WATER RESOURCES ENGINEERING

ENGINEERING DIVISION
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