



**CONTRACT DOCUMENTS &  
TECHNICAL SPECIFICATIONS**

**PWC 2526034**

**PHASE V ANNEXATION PROJECT XV CONSTRUCTION  
AREA 32 EAST SECTIONS II**

**ISSUED FOR BID**

**JANUARY 2026**

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

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## **SECTION A – PROJECT SPECIFICS GENERAL**

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**ADVERTISEMENT FOR BID  
FAYETTEVILLE PUBLIC WORKS COMMISSION  
PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST SECTION II**

**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 Wednesday, January 28, 2026**, at which time they will be publicly opened and read.

The project consists of 6,360 linear feet of 8-inch gravity sanitary sewer, 610 linear feet of 8-inch restrained joint ductile iron aerial crossings, 41 sanitary sewer laterals and 34 manholes, approximately 1,033 linear feet of 8-inch sanitary sewer in 24-inch encasement by bore and jack, 31 linear feet of 8-inch sanitary sewer in 24-inch encasement by open cut, 1,700 linear feet of 12-inch water mains and 55 linear feet of 12-inch water main. The project includes bypass pumping, stream crossings, stream bank stabilization, trenchless construction, aerial crossings, asphalt pavement patch, sod installation and restoration, as well as testing and acceptance of the gravity sanitary sewer and water mains.

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 **10:00 a.m., EST Tuesday, January 13, 2026, via web conference**. All potential bidders must email Shelby Lesane, Procurement Advisor II at [procurement@faypwc.com](mailto:procurement@faypwc.com) of their intent to attend, and to be added to the meeting ID: 286 136 132 579 69#. Potential bidders will have the ability to join the virtual meeting via phone at: (910) 302-6113 with Phone Conference ID 868 602 800# and/or via Microsoft Teams. It is encouraged to utilize Microsoft Teams as this pre-bid meeting may contain a presentation of plans and an agenda. Should you need assistance accessing Microsoft Teams via web, smart phone, or tablet, please contact Shelby Lesane via email at the email address listed above.

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

Bids must be enclosed in a sealed envelope addressed to Shelby Lesane, Procurement Advisor II, Fayetteville Public Works Commission, 955 Old Wilmington Road, Fayetteville, North Carolina 28301. The outside of the envelope must be marked **SEALED BID: PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST SECTION II** 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 **Wednesday, January 7, 2026** 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](mailto:fsucro@uncfsu.edu)

Plans and Specifications are also being furnished to ISQFT ([www.isqft.com](http://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 and all bids, to waive any and all informalities and irregularities, and to disregard all nonconforming, nonresponsive, or conditional bids. PWC further reserves the right to request additional information from any or all bidders for evaluation purposes; failure or refusal to furnish such information as requested may result in rejection of the bid.

The bid tabulation and announcement of the apparent low bidder at the bid opening do not constitute a binding contract with PWC. No contract will be considered awarded until a formal written Agreement is executed by both PWC and the successful bidder. The award of a contract, if made, will be to the lowest responsible, responsive bidder whose qualifications indicate the award will be in the best interest of PWC.

PWC also reserves the right, at its sole discretion, to re-advertise for bids if deemed in the best interest of PWC.

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**

Nikole Bohannon

Procurement Manager

**00100 - INSTRUCTIONS TO BIDDERS  
FAYETTEVILLE PUBLIC WORKS COMMISSION  
PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST SECTIONS II**

**A. DEFINED TERMS**

Terms used in these Instructions to Bidders are defined in the Definitions and Terminology sections of 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 Shelby Lesane, Procurement Advisor II, by email to [procurement@faypwc.com](mailto:procurement@faypwc.com). In order to receive consideration, questions must be received by Friday, January 16, 2026, 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 Project 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 Project 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. VENDOR REGISTRATION VIA ISUPPLIER**

1. All vendors interested in doing business with PWC must register as a vendor through the iSupplier Portal using the link below. The iSupplier self-service portal enables vendors to have real-time access to information regarding purchase orders, invoices, and payments through a secure environment. Attach a copy of your W9 to your online registration.

<https://www.faypwc.com/isupplier-doing-business-with-pwc/>

#### **F. 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.
4. PWC is looking for utility contractors with experienced personnel in all facets of water and/or sewer main replacement services. The minimum work experience of the following

Personnel Classifications will be required:

- **Superintendent:** Must have a minimum of 10 years of experience as a superintendent, coordinating and managing all aspects of sewer and/or water construction projects.
- **Foreman/Crew Leader:** Must have a minimum of 8 years of experience as a foreman/crew leader, coordinating and supervising a team of crew members for sewer and/or water construction projects.
- **Operator:** Must have a minimum of 8 years of experience operating heavy equipment for sewer and/or water construction projects.

**5. Equipment Requirements (Minimum)**

- Excavator, 65,000 to 85,000 LB Class
- Excavator, 38,000 to 64,999 LB Class
- Excavator, 18,000 to 37,999 LB Class

Contractor will only be paid for equipment and tools in use on work-site.

**G. 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.

**H. 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

**I. SUBCONTRACTORS**

1. Contractor shall subcontract no more than 49 percent (49%) of the value of the Contract.
2. Each Bidder shall submit to PWC with its bid the List of Subcontractors, Suppliers, other persons, and organizations proposed for those portions of the Work for which such identification is required. If PWC, after due investigation has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, PWC may, before Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute without an increase in the Bid.

3. 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.

**J. SMALL & DISADVANTAGED BUSINESS ENTERPRISE (SDBE) PROGRAM / SMALL LOCAL SUPPLIER (SLS) PROGRAM**

1. Program Commitment: Fayetteville Public Works Commission (PWC) is committed to promoting the utilization of Small and Disadvantaged Business Enterprises (SDBEs) and Small Local Suppliers (SLS) in PWC's procurement of construction contracting. PWC seeks to provide equitable access and opportunity to qualified businesses across its operational areas.
  - The SDBE Program encourages participation from firms certified through recognized third-party agencies, including the NC Department of Administration (HUB Office), NC Department of Transportation (DBE Program), and the U.S. Small Business Administration (SBA).
  - The SLS Program continues to promote engagement of small, local firms within the Fayetteville Metropolitan Statistical Area (MSA), consisting of Cumberland, Hoke, and Harnett Counties.
2. Applicability and Bidder Requirements: For procurements of construction exceeding \$30,000, Bidders must demonstrate good-faith efforts to engage certified SDBEs and, when applicable, SLSs. This includes outreach to certified firms, solicitation of quotes, and attendance at pre-bid meetings. Documentation must include completed Affidavit forms (A–E) as outlined in the SDBE Compliance Provisions within the Contract Documents. Attendance at the Pre-Bid Meeting is strongly recommended to review program expectations and compliance procedures.
3. Certification and Verification: Certifications recognized under this program include:
  - NC Department of Transportation (NCDOT) Disadvantaged Business Enterprise (DBE)
  - NC Department of Administration (DOA) Historically Underutilized Business (HUB)
  - U.S. Small Business Administration (SBA) certifications, including 8(a), WOSB, SDVOSB, and HUBZone designations. Firms holding current certifications with these agencies are acceptable for listing in the bidder's submittal and will be counted toward participation goals. Vendor directories can be accessed via the following links:
    - NCDOT DBE Directory: <https://www.ebs.nc.gov/VendorDirectory>

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

## **K. SUBMISSION OF BIDS**

1. All Bidders shall use the enclosed Bid Forms, or exact copies thereof, in submitting their bid prices. Failure to provide full and complete Bid Forms using the form provided herein will result in a bid being deemed non-responsive.
2. PWC will not accept modified Bid Forms, oral Bids, or Bids received by telephone, email, or telecopier (FAX machine) for this Bid.
3. 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.
4. 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.
5. 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: Shelby Lesane, Procurement Advisor II  
955 Old Wilmington Road  
Fayetteville, North Carolina 28301
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.

12. All Bids received in the Procurement Department by the deadline indicated will be kept sealed until the time and date of the Bid Opening.
13. All late Bids shall be returned unopened to the sender.

#### **L. 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.

#### **M. 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.

#### **N. 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.

**O. 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

**P. BIDS TO REMAIN OPEN**

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

**Q. 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.

**R. AWARD OF CONTRACT**

1. PWC reserves the right to reject any and all bids, to waive any and all minor informalities and irregularities, and to disregard all nonconforming, nonresponsive, or conditional bids. PWC further reserves the right to request additional information from any or all bidders for evaluation purposes; failure or refusal to furnish such information as requested may result in rejection of the bid. The bid tabulation and announcement of the apparent low bidder at the bid opening do not constitute a binding contract with PWC. No contract will be considered awarded until a formal written Agreement is executed by both PWC and the successful bidder. The award of a contract, if made, will be to the lowest responsible, responsive bidder whose qualifications indicate the award will be in the best interest of PWC. PWC also reserves the right, at its sole discretion, to re-advertise for bids if deemed in the best interest of PWC.
2. In case of a tie Bid, the tie shall be decided by lot.
3. It is the intent of 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 responsible 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.

#### **S. 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.

#### **T. PERFORMANCE AND OTHER BONDS**

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

#### **U. 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.

#### **V. 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  
PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST  
SECTIONS II**

Virtual Pre-Bid Meeting: 10:00 am, Tuesday, January 13, 2026

**(MANDATORY)**

Via Microsoft Teams

Meeting ID: 286 136 132 579 69

Passcode: 8vj6gm9J

Deadline for Questions from Bidders<sup>1</sup> 5:00 pm, Friday, January 16, 2026

Deadline for Addenda issued by PWC Procurement Department and Project Engineer<sup>2</sup> 5:00 pm, Wednesday, January 21, 2026

Bid Opening (Submittal Deadline) 2:00 pm, Wednesday, January 28, 2026  
Fayetteville Public Works Commission  
Administrative Building  
Conference Room 107  
955 Old Wilmington Road  
Fayetteville, NC 28301

Target Commission Meeting Tuesday, February 10, 2026

Target City Council Meeting Monday, February 23, 2026

Contract Time: 250 days

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 Shelby Lesane, Procurement Advisor II, by email to [procurement@faypwc.com](mailto:procurement@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. Affidavit A – Listing of Good Faith Efforts, et al.
- 15. 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.**
- 16. Affidavit E - Identification of Minority Business Participation Form.
- 17. SDBE/ SLS Disclosure Form.
- 18. The Completed Technical Evaluation Criteria Form.

\*\*FAILURE TO SUBMIT THE ABOVE FORMS WITH THE BID FORM PROVIDED HEREIN 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: Shelby Lesane, Procurement Advisor II  
955 Old Wilmington Road  
Fayetteville, North Carolina 28301

PROJECT: **PWC2526034 - PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA  
32 EAST SECTIONS II**

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.

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
ANNEXATION PHASE V, PROJECT XV CONSTRUCTION  
AREA 32 EAST SECTION II  
FAYETTEVILLE, NORTH CAROLINA  
BID FORM**

<i>Item No.</i>	<i>Ref. No.</i>	<i>Item</i>	<i>Estimated Quantities</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Cost Extension</i>
<b>PART "A" STREET CONSTRUCTION - "BASE BID"</b>						
A-1	G-1	Mobilization and Demobilization @_____ lump sum	1	LS		
A-2	G-2	Traffic Control and Traffic Plan @_____ lump sum	1	LS		
A-3	A-1	2-inches min., SF9.5A for Permanent Pavement Patch (No Overage Allowed, NOA) @_____ square yard	495	SY		
A-4	A-2	2-inches min., SF9.5A Permanent Pavement Patch Failed Areas - PWC (NOA) @_____ square yard	20	SY		
A-5	A-3	Undercut Excavation in Asphalt Subgrade (NOA) @_____ per cubic yard	60	CY		
A-6	A-4	Remove and Replace Concrete Driveways (NOA) @_____ per square yard	570	SY		
A-7	A-5	Incidental Stone @_____ per ton	18	TN		
A-8	A-6	Maintenance Stone (NOA) @_____ per square yard	40	SY		
A-9	A-7	Replace Gravel/Soil Driveway with Aggregate Base Course @_____ per square yard	1,055	SY		
A-10	A-8	Remove and Replace Asphalt Driveways (NOA) @_____ per square yard	600	SY		
		<b>TOTAL PART "A" STREET CONSTRUCTION - "BASE BID"</b>				

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
ANNEXATION PHASE V, PROJECT XV CONSTRUCTION  
AREA 32 EAST SECTION II  
FAYETTEVILLE, NORTH CAROLINA  
BID FORM**

<b>Item No.</b>	<b>Ref. No.</b>	<b>Item</b>	<b>Estimated Quantities</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Cost Extension</b>
<b>PART "C" WATER CONSTRUCTION - "BASE BID"</b>						
C-1	G-1	Mobilization and Demobilization @_____ lump sum	1	LS		
C-2	G-2	Traffic Control and Traffic Plan @_____ lump sum	1	LS		
C-3	G-3	Erosion and Sediment control @_____ lump sum	1	LS		
C-4	G-4	Clearing and Grubbing, Permanent Easements @_____ per acre	0.028	AC		
C-5	G-4	Clearing and Grubbing, Temporary Easements @_____ per acre	0.020	AC		
C-6	G-5	Sod (No Overage Allowed) @_____ per square yard	3,820	SY		
C-7	G-6	Temporary Seeding (No Overage Allowed) @_____ per acre	0.80	AC		
C-8	C-1	12-Inch Ductile Iron Water Main Installation @_____ per linear foot	400	LF		
C-9	C-2	12-Inch Restrained Joint Ductile Iron Water Main @_____ per linear foot	1,300	LF		
C-10	C-3	Guided Bore & Jack 24-inch Steel Encasement W/ 12-inch RJDIP Carrier Pipe @_____ per linear foot	55	LF		
C-11	C-4	Undercut Excavation @_____ per cubic yard	45	CY		
C-12	C-5	12-Inch Restrained Joint Gate Valves @_____ per each	5	EA		
C-13	C-6	Tapping Sleeve & Valve: 16-Inch X 16-Inch X 12-Inch @_____ per each	1	EA		

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
ANNEXATION PHASE V, PROJECT XV CONSTRUCTION  
AREA 32 EAST SECTION II  
FAYETTEVILLE, NORTH CAROLINA  
BID FORM**

<i>Item No.</i>	<i>Ref. No.</i>	<i>Item</i>	<i>Estimated Quantities</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Cost Extension</i>
C-14	C-7	12-Inch X 12-Inch X 6-Inch Fire Hydrant Installation @_____per each	5	EA		
C-15	C-8	CONNECT TO EXISTING WATER MAIN @_____per each	1	EA		
C-16	C-9	Sterilization & Testing @_____per linear foot	1,755	LF		
C-17	C-10	Well Abandonment @_____per each	2	EA		
C-18	G-7	Borrow Excavation @_____per cubic yard	45	CY		
		<b>TOTAL PART "C" WATER CONSTRUCTION - "BASE BID"</b>				

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
ANNEXATION PHASE V, PROJECT XV CONSTRUCTION  
AREA 32 EAST SECTION II  
FAYETTEVILLE, NORTH CAROLINA  
BID FORM**

<b>Item No.</b>	<b>Ref. No.</b>	<b>Item</b>	<b>Estimated Quantities</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Cost Extension</b>
<b>PART "D" SANITARY SEWER UTILITIES - "BASE BID"</b>						
D-1	G-1	Mobilization and Demobilization @_____ lump sum	1	LS		
D-2	G-2	Traffic Control and Traffic Plan @_____ lump sum	1	LS		
D-3	G-3	Erosion and Sediment control @_____ lump sum	1	LS		
D-4	G-4	Clearing and Grubbing, Permanent Easements @_____ per acre	2.72	AC		
D-5	G-4	Clearing and Grubbing, Temporary Easements @_____ per acre	2.22	AC		
D-6	G-5	Sod (No Overage Allowed) @_____ per square yard	49,853	SY		
D-7	G-5	Sod (Sanitary Sewer Laterals) (No Overage Allowed) @_____ per square yard	34.00	SY		
D-8	G-6	Temporary Seeding (No Overage Allowed) @_____ per acre	11.000	AC		
D-9	G-7	Wetland Seeding (No Overage Allowed) @_____ per acre	0.125	AC		
D-10	D-1	8" SDR26 PVC Sanitary Sewer 10'-12' Depth @_____ per linear foot	175	LF		
D-11	D-2	8" CL 50 DI Sanitary Sewer 0'-6' Depth @_____ per linear foot	78	LF		
D-12	D-2	8" CL 50 DI Sanitary Sewer 6'-8' Depth @_____ per linear foot	1,053	LF		
D-13	D-2	8" CL 50 DI Sanitary Sewer 8'-10' Depth @_____ per linear foot	608	LF		

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
ANNEXATION PHASE V, PROJECT XV CONSTRUCTION  
AREA 32 EAST SECTION II  
FAYETTEVILLE, NORTH CAROLINA  
BID FORM**

<b>Item No.</b>	<b>Ref. No.</b>	<b>Item</b>	<b>Estimated Quantities</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Cost Extension</b>
D-14	D-2	8" CL 50 DI Sanitary Sewer 10'-12' Depth @_____per linear foot	546	LF		
D-15	D-2	8" CL 50 DI Sanitary Sewer 12'-14' Depth @_____per linear foot	652	LF		
D-16	D-2	8" CL 50 DI Sanitary Sewer 14'-16' Depth @_____per linear foot	339	LF		
D-17	D-2	8" CL 50 DI Sanitary Sewer 16'-18' Depth @_____per linear foot	503	LF		
D-18	D-2	8" CL 50 DI Sanitary Sewer 18'-20' Depth @_____per linear foot	29	LF		
D-19	D-2	8" CL 50 DI Sanitary Sewer 20'-22' Depth @_____per linear foot	59	LF		
D-20	D-2	8" CL 50 DI Sanitary Sewer 22'-24' Depth @_____per linear foot	86	LF		
D-21	D-2	8" CL 50 DI Sanitary Sewer 24'-26' Depth @_____per linear foot	76	LF		
D-22	D-2	8" CL 50 DI Sanitary Sewer 26'-28' Depth @_____per linear foot	69	LF		
D-23	D-2	8" CL 50 DI Sanitary Sewer 28'-30' Depth @_____per linear foot	259	LF		
D-24	D-2	8" CL 50 Restrained DI Sanitary Sewer 0'-6' Depth @_____per linear foot	45	LF		
D-25	D-2	8" CL 50 Restrained DI Sanitary Sewer 6'-8' Depth @_____per linear foot	527	LF		
D-26	D-2	8" CL 50 Restrained DI Sanitary Sewer 8'-10' Depth @_____per linear foot	362	LF		

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
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AREA 32 EAST SECTION II  
FAYETTEVILLE, NORTH CAROLINA  
BID FORM**

<b>Item No.</b>	<b>Ref. No.</b>	<b>Item</b>	<b>Estimated Quantities</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Cost Extension</b>
D-27	D-2	8" CL 50 Restrained DI Sanitary Sewer 10'-12' Depth @_____per linear foot	260	LF		
D-28	D-2	8" CL 50 Restrained DI Sanitary Sewer 12'-14' Depth @_____per linear foot	161	LF		
D-29	D-2	8" CL 50 Restrained DI Sanitary Sewer 14'-16' Depth @_____per linear foot	97	LF		
D-30	D-2	8" CL 50 Restrained DI Sanitary Sewer 16'-18' Depth @_____per linear foot	91	LF		
D-31	D-2	8" CL 50 Restrained DI Sanitary Sewer 18'-20' Depth @_____per linear foot	159	LF		
D-32	D-2	8" CL 50 Restrained DI Sanitary Sewer 20'-22' Depth @_____per linear foot	106	LF		
D-33	D-3	Guided Bore & Jack (24" Steel Encasement, 0.375" thick, w/ 8" Restrained DIP Carrier Pipe) (Typical Launch Pit) @_____per linear foot	1,033	LF		
D-34	D-17	Open Cut (24" Steel Encasement, 0.375" thick, w/ 8" Restrained DIP Carrier Pipe) @_____per linear foot	31	LF		
D-35	D-19	Furnish and Install Aerial 8-inch Class 53 RJDIP Crossing (Including Piles) @_____per linear foot	610	LF		
D-36	D-4	Sanitary Sewer Manhole 5' Dia 12'-14' Depth @_____per each	1	EA		
D-37	D-4	Sanitary Sewer Manhole 4' Dia 0'-6' Depth @_____per each	2	EA		
D-38	D-4	Sanitary Sewer Manhole 4' Dia 6'-8' Depth @_____per each	3	EA		

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
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BID FORM**

<b>Item No.</b>	<b>Ref. No.</b>	<b>Item</b>	<b>Estimated Quantities</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Cost Extension</b>
D-39	D-4	Sanitary Sewer Manhole 4' Dia 8'-10' Depth @_____per each	7	EA		
D-40	D-4	Sanitary Sewer Manhole 4' Dia 10'-12' Depth @_____per each	6	EA		
D-41	D-4	Sanitary Sewer Manhole 4' Dia 12'-14' Depth @_____per each	6	EA		
D-42	D-4	Sanitary Sewer Manhole 4' Dia 14'-16' Depth @_____per each	4	EA		
D-43	D-4	Sanitary Sewer Manhole 4' Dia 16'-18' Depth @_____per each	2	EA		
D-44	D-4	Sanitary Sewer Manhole 4' Dia 18'-20' Depth @_____per each	1	EA		
D-45	D-4	Sanitary Sewer Manhole 4' Dia 22'-24' Depth @_____per each	1	EA		
D-46	D-4	Sanitary Sewer Manhole 4' Dia 30'-32' Depth @_____per each	1	EA		
D-47	D-5	Sanitary Sewer Doghouse Manhole 5' Dia 10'-12' Depth @_____per each	1	EA		
D-48	D-18	Sanitary Sewer Temporary Manhole (Cokefield Ct) 4' Dia 10' Depth @_____per each	1	EA		
D-49	D-6	Abandon Existing Manhole (Cokefield Ct) (inclusive of Removal of Existing and Temporary Manholes) @_____per each	2	EA		
D-50	D-7	Abandon Existing Lateral (Cokefield Ct) (inclusive of Removal of Existing and Temporary Laterals) @_____per each	6	EA		

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

<b>Item No.</b>	<b>Ref. No.</b>	<b>Item</b>	<b>Estimated Quantities</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Cost Extension</b>
D-51	D-8	Abandon Existing Sewer Main (Cokefield Ct) @_____per linear foot	130	LF		
D-52	D-9	Reconnect Sewer Lateral to Existing Plumbing (Cokefield Ct) @_____per each	3	EA		
D-53	D-10	4" Interior Drop Structure @_____per each	7	EA		
D-54	D-10	8" Interior Drop Structure @_____per each	3	EA		
D-55	D-11	4" PVC Sanitary Sewer Lateral @_____per each	1	EA		
D-56	D-12	4" DIP Sanitary Sewer Lateral @_____per each	36	EA		
D-57	D-12	4" RJDIP Sanitary Sewer Lateral @_____per each	4	EA		
D-58	D-13	8" Connection to Existing Structure @_____per each	2	EA		
D-59	D-14	Undercut Excavation @_____per cubic yard	560	CY		
D-60	D-15	Testing @_____per linear foot	8,014	LF		
D-61	D-16	Install Cam-Lock Ring & Cover on Existing Manhole @_____per each	1	EA		
D-62	G-8	Borrow Excavation @_____per cubic yard	225	CY		

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
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BID FORM**

<i>Item No.</i>	<i>Ref. No.</i>	<i>Item</i>	<i>Estimated Quantities</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Cost Extension</i>
D-63	B-8	Remove and Replace with new pipe 15" CL IV RCP 0'-6' Depth @ _____ per linear foot	50	LF		
D-64	G-9	Install 6' Chain Link Double Gates Across Easements @ _____ per each	1	EA		
		<b>TOTAL PART "D" SANITARY SEWER UTILITIES - "BASE BID"</b>				

TOTAL PART "A" STREET CONSTRUCTION - "BASE BID" \_\_\_\_\_

TOTAL PART "C" WATER CONSTRUCTION - "BASE BID" \_\_\_\_\_

TOTAL PART "D" SANITARY SEWER UTILITIES - "BASE BID" \_\_\_\_\_

**TOTAL BASE BID** \_\_\_\_\_

**- BID SUMMARY-**

<b>TOTAL PART "A" STREET CONSTRUCTION</b>	<b>\$ _____</b>
<b>TOTAL PART "B" INTENTIONALLY OMITTED</b>	
<b>TOTAL PART "C" WATER CONSTRUCTION</b>	<b>\$ _____</b>
<b>TOTAL PART "D" SANITARY SEWER UTILITIES</b>	<b>\$ _____</b>
<b>TOTAL BASE BID (A+C+D)</b>	<b>\$ _____</b>

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

Addendum No. 1	Date _____
Addendum No. 2	Date _____
Addendum No. 3	Date _____
Addendum No. 4	Date _____
Addendum No. 5	Date _____
Addendum No. 6	Date _____
Addendum No. 7	Date _____

The undersigned BIDDER \_\_\_\_\_ (Contractor Name) certifies that they are licensed as a Contractor under N.C.G.S § 87, and that their license number is \_\_\_\_\_ (License Number).

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 the completion date noted in the Notice to Proceed.
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 \_\_\_\_\_ 2026

**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 \_\_\_\_\_ 2026

\_\_\_\_\_  
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 \_\_\_\_\_ 2026

\_\_\_\_\_  
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 \_\_\_\_\_ 2026

\_\_\_\_\_  
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 \_\_\_\_\_ 2026

\_\_\_\_\_  
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.)

\*\*\*\*\***TO BE SUBMITTED WITH BID PACKAGE**\*\*\*\*\*  
**TECHNICAL EVALUATION CRITERIA FORM**  
**PROJECT DOCUMENTATION**

(1) Permanent Name of Business:

(2) Permanent address:

(3) Length of Time in Business:	
---------------------------------	--

(4) Has the organization operated under any other name?	
---	--

(5) State the names and/or companies financially interested in the proposal:	
--	--

(6) 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 yes, list name(s), and responsibility.	
--	--

**UTILITY RETROFIT EXPERIENCE/WATER AND SEWER MAIN EXPERIENCE**

(1) List not less than three (3) completed retrofit projects of similar size, scope, nature, and cost, to include the dates of such projects. Please provide all requested information for each listed project. Each project should be from separate references. List only those projects completed as Prime Contractor.

Project 1A:	Cost:
-------------	-------

Location:	Dates:	Size:
-----------	--------	-------

Scope:	Client:	Phone:
--------	---------	--------

Project 1B:	Cost:
-------------	-------

Location:	Dates:	Size:
-----------	--------	-------

Scope:	Client:	Phone:
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Project 1C:		Cost:
Location:	Dates:	Size:
Scope:	Client:	Phone:
(2) A listing of three (3) water and/or sewer main projects of similar size, scope and cost. (Provide reference information as stated in #1.)		
Project 2A:		Cost:
Location:	Dates:	Size:
Scope:	Client:	Phone:
Project 2B:		Cost:
Location:	Dates:	Size:
Scope:	Client:	Phone:
Project 2C:		Cost:
Location:	Dates:	Size:
Scope:	Client:	Phone:
(3) List any subcontracting experience on retrofit projects with specifics to the type of work performed for this project. Please provide all requested information.		
Project:		Cost:
Location:	Dates:	Size:

Work Performed:		
Project:		Cost:
Location:	Dates:	Size:
Work Performed:		
Project:		Cost:
Location:	Dates:	Size:
Work Performed:		
(4) List of projects in progress. Please provide all requested information.		
Project:		Cost:
Owner:		
Percentage Complete:		Scheduled Completion Date:
Project:		Cost:
Owner:		
Percentage Complete:		Scheduled Completion Date:
Project:		Cost:

Owner:	
Percentage Complete:	Scheduled Completion Date:
Project:	
Project:	Cost:
Owner:	
Percentage Complete:	Scheduled Completion Date:
Project:	
Project:	Cost:
Owner:	
Percentage Complete:	Scheduled Completion Date:
Project:	
Project:	Cost:
Owner:	
Percentage Complete:	Scheduled Completion Date:
<b>PROJECT PERSONNEL AND EXPERIENCE</b>	
(1) The number of crews qualified and available to perform the work stated in this proposal:	
(2) The names of Bidder superintendents and crew leaders/foreman who are qualified and available to perform the work stated in this proposal:	Superintendents:
	Crew leaders/foreman:
<b>ADDITIONAL ITEMS</b>	
<b>The following items shall be submitted as attachments:</b>	
(1) Affidavit stating any OSHA violations occurring within the past three (3) years.	
(2) A statement provided by the Surety Company stating the Bidder's bonding limit and a statement of the amount of work currently under bond.	
(3) A statement listing any judgments, claims, arbitration proceedings, or suits pending or outstanding against organization or its officers.	
(4) A statement listing any filed lawsuits, judgments, claims, arbitration proceedings, or suits pending with regard to construction contracts within the last five (5) years.	

(5) The resumes or brief summary of key personnel of the organization. Identify the person that will be primarily responsible for the project.	
(6) List of equipment that is available for use on the subject project.	
The Owner may conduct such investigations/verifications as deemed necessary to establish the responsibility, qualification and financial ability of the Bidder. Should the Owner adjudge that the apparent low bidder is not the lowest responsive, responsible bidder by virtue of the 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 the Owner shall be considered as non-responsive and therefore, basis for rejection of the bid.	
Submitted By:	Date:
Printed Name:	Title:

## LIST OF SUBCONTRACTORS

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

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

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

\_\_\_\_\_  
Bidder's 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:

**PWC2526034 - PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST  
SECTION II**

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  
PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST SECTION II**

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

**\*\*\* THIS PAGE WAS INTENTIONALLY LEFT BLANK\*\*\***

# SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

## FAYETTEVILLE PUBLIC WORKS COMMISSION'S SDBE COMPLIANCE PROVISIONS

### APPLICATION:

The requirements of Fayetteville Public Works Commission (PWC) Small Disadvantaged Business Enterprise Policy for participation in specific contracts are hereby made part of the Contract Documents. Copies of the Policy may be obtained from:

Fayetteville Public Works Commission  
Economic Impact Program  
P.O. Box 1089  
Fayetteville, North Carolina 28302  
Phone (910) 223-4016 Fax (910) 483-1429  
E-mail: [eiprogram@faypwc.com](mailto:eiprogram@faypwc.com)

NCDOT DBE Directory: [www.ebs.nc.gov/VendorDirectory](http://www.ebs.nc.gov/VendorDirectory)

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

### **SDBE Compliance Requirements:**

1. The Bidder shall provide, with their Bid Form, at the time bids are due, 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 Form, at the time bids are due, 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.<sup>1</sup>

**Note:** Affidavit B should **only** be used 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.
3. Upon being identified as the apparent lowest responsive, responsible Bidder, a Bidder shall, within twenty-four (24) hours of PWC's notification provide a properly completed and executed copy of **either:**
  - Affidavit C – Percentage of SDBE Participation **OR**
  - Affidavit D – Good-Faith Efforts.
4. All Bidders must provide with their Bid Form, at the time bids are due, a properly completed and executed copy of Affidavit E- Identification of SDBE/Local Participation Form

## SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

All written statements, certifications, or intentions made by the Bidder shall become a part of the agreement between the Contractor and Fayetteville Public Works Commission for performance of this contract.

### **SUBCONTRACTOR PAYMENT REQUIREMENTS:**

North Carolina General Statutes (N.C.G.S.) 143-134.1 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 Fayetteville Public Works Commission 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

# SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

## Affidavit A: Listing of the Good Faith Efforts

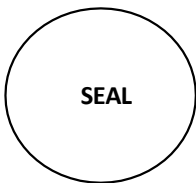
Affidavit of \_\_\_\_\_  
 (Name of Bidder)

**I have made a good faith effort to comply under the following areas checked:**

<b>Total Available GFE Points: 155</b>		<b>Expected Number GFE Points <span style="color: red;">Required: 50</span></b>
Points		
	10	Contacting small-disadvantaged businesses (SDBE) that reasonably could have been expected to submit a quote and that were known to the contractor or available on Federal, 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.
	10	Making the construction plans, scope of work, specifications, or requirements available for review by prospective SDBE or providing these documents to them at least 10 days before the bid or proposals are due.
	15	Breaking down or combining elements of work into economically feasible units to facilitate SDBE participation.
	10	Working with SDBE trade, community, or contractor organizations identified by the U.S. Small Business Administration, N.C. Office for Historically Underutilized Businesses, or N.C. Department of Transportation, and included in the bid documents that provide assistance in the recruitment of small, disadvantaged businesses.
	10	Attending any pre-bid meetings scheduled by the public owner.
	20	Providing assistance in getting required bonding or insurance, or providing alternatives to bonding or insurance for subcontractors.
	15	Negotiating in good faith with interested SDBEs and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of an SDBE based on a lack of qualification should have the reasons documented in writing.
	25	Providing assistance to an otherwise qualified SDBEs 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 SDBEs in establishing credit.
	20	Negotiating joint venture and partnership arrangements with small, disadvantaged businesses to increase opportunities for SDBE participation on a public construction or repair project when possible.
	20	Providing quick pay agreements and policies to enable SDBE contractors and suppliers to meet cash-flow demands.
<b>Total GFE Points (Claimed by Bidder):</b>		<b>Total GFE Points (Assessed by PWC):</b>

In accordance with PWC's SDBE Policy and Program Plan, 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 SDBE 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 \_\_\_\_\_

**SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM**

**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:**

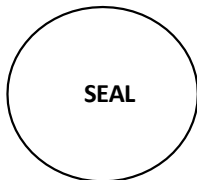
\_\_\_\_\_  
(Name of Project)

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: \_\_\_\_\_



State of North Carolina, County of \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of 20\_\_

Notary Public \_\_\_\_\_

My commission expires \_\_\_\_\_

# SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

## Affidavit C: Percentage of SDBE Participation

Affidavit of \_\_\_\_\_  
(Name of Bidder)

I hereby certify that on contract: \_\_\_\_\_  
(Name of Project)

\$ \_\_\_\_\_  
(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). SDBEs will be employed as subcontractors, vendors, or providers of professional services. Such work will be subcontracted to the following firms listed below.

<u>Name, Address, &amp; Phone No.</u>	<u>*SDBE/Certifying Agency</u>	<u>NAICS</u>	<u>Dollar Value</u>	<u>% of Contract</u>

\*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D), Small (S)  
 \*Certifying Agencies: NC DOA (HUB), NC DOT (DBE), U.S. SBA

**SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM**

Pursuant to NCGS 143-128.2(d), the undersigned will enter into a formal agreement with SDBEs 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: \_\_\_\_\_



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

# SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

## Affidavit D: Good Faith Efforts

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

<u>Name, Address, &amp; Phone No.</u>	<u>*SDBE Category</u>	<u>NAICS</u>	<u>Dollar Value</u>

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

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 SDBEs. Each solicitation may include a specific description of the work to be subcontracted, the location where bid documents can be reviewed, the representative of the Prime Bidder to contact, and the 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 an SDBE 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 SDBE, 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 SDBEs.
- h. Letter detailing reasons for rejection of an SDBE due to lack of qualification.
- i. Letter documenting proposed assistance offered to SDBEs 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.

Failure to provide the documentation 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: \_\_\_\_\_



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

# SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

## Affidavit E: Identification of SDBE/Local Participation

\_\_\_\_\_ (Name of Bidder)

I hereby certify that on contract: \_\_\_\_\_

(Name of Project)

We will use the following Small Disadvantaged Business Enterprises (SDBE), and Local (Cumberland, Hoke, Harnett County) as construction subcontractors, vendors, suppliers, or providers of professional or general services.

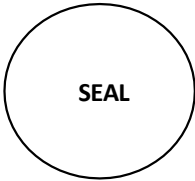
<u>Name, Address, &amp; Phone No.</u>	<u>*SDBE Category / **Local</u>	<u>NAICS</u>	<u>Dollar Value</u>

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

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

The total value of SDBE/local business contracting will be \$ \_\_\_\_\_

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 \_\_\_\_\_

**SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM**

**FAYETTEVILLE PUBLIC WORKS COMMISSION  
SDBE ADD / CHANGE FORM**

If a SDBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the good faith efforts set forth in the SDBE Policy if soliciting a replacement or additional subcontractor.

**For SDBE Change Request, please provide all information below:**

Prime Contractor: \_\_\_\_\_

Subcontracted Work: \_\_\_\_\_

Previous Subcontractor: \_\_\_\_\_

Reason this for change request:  
\_\_\_\_\_

New Subcontractor: \_\_\_\_\_ SDBE Category: \_\_\_\_\_

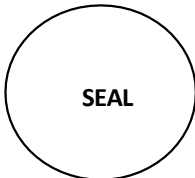
**To Add SDBE Subcontractor/Subcontracted work:**

If this is a new trade being subcontracted or a subcontractor that was not documented in the original Project Bid Information submittal, then good faith efforts to solicit an SDBE must be documented, as the original SDBE instructions indicate. Please provide all good faith efforts below showing all the SDBE firms contacted to perform this work, along with any additional good faith efforts or evidence that there are not reasonably available firms in the work area. PWC's SDBE Policy requires that good faith efforts are to be carried out to the fullest extent practicable. If solicitations were not carried out due to being impracticable, please attach this explanation to this form.

Name, Address, & Contact Information	SBE or DBE and Certifying agency	How was this firm contacted (email, letter, or Phone), and what was the result of the solicitation? *

\*Must submit copies of emails or letters. If phone calls were made, this sheet can serve as documentation of calls

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 \_\_\_\_\_

## SMALL AND DISADVANTAGED BUSINESS (SDBE), SMALL LOCAL SUPPLIER (SLS), AND LOCAL BUSINESS DISCLOSURE FORM

Prime Contractor: \_\_\_\_\_  
 Address & Phone: \_\_\_\_\_  
 Project: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Pay Application # \_\_\_\_\_

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

Firm Name	SDBE, SLS, or Local	Construction Trade or Supplies	Payment Amount
<i>Ex. ABC Company</i>	<i>SDBE – NC HUB M</i>	<i>Hauling</i>	<i>\$25,000.00</i>
<i>Ex. DEF Enterprise</i>	<i>SLS – PWC</i>	<i>Paint</i>	<i>\$600.00</i>
<i>Ex. GHI Incorporated</i>	<i>Local – Fayetteville</i>	<i>Tire Repair</i>	<i>\$2,000.00</i>

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**SECTION B - CONTRACT EXECUTION DOCUMENTS**

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**NOTICE OF AWARD**

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PROJECT DESCRIPTION: PWC2526034 - PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST SECTION II**

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 \_\_\_\_\_, 2026.

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

**BY: Nikole Bohannon  
TITLE: Procurement Manager**

**ACCEPTANCE OF AWARD**

**PWC2526034 - PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST  
SECTION II**

Receipt of the preceding NOTICE OF AWARD is hereby acknowledged this the \_\_\_\_\_  
day of \_\_\_\_\_, 2026.

(CONTRACTOR)

By: \_\_\_\_\_

Title: \_\_\_\_\_

- END OF SECTION -

State of North Carolina  
Cumberland County

## CONSTRUCTION AGREEMENT

THIS CONSTRUCTION AGREEMENT (“Agreement” or “Contract”) is made by and between the Fayetteville Public Works Commission (“PWC”), a North Carolina public authority, and [REDACTED] [PER THE CHARTER (SEE SEC 6A.20), THE CONSTRUCTION CONTRACT, IF MORE THAN \$500K, MUST BE BETWEEN THE CITY (BY AND THROUGH PWC) AND THE CONTRACTOR], (“Contractor”), a [REDACTED] registered to do business in North Carolina (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. General Conditions
- c. Bid Submittal Documents
- d. Contractor's Submitted Bid
- e. Bid Bond
- f. [Form of Exceptions]
- g. Notice of Award
- h. Acceptance of Award
- i. Performance Bond
- j. Payment Bond
- k. Copy of General Contractor's License
- l. Power of Attorney
- m. Certificate of Insurance
- n. Section C – Administrative Provisions
- o. Section D - Technical Specifications
- p. [Additional Specifications]
- q. [Appendices]

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

- r. Notice to Proceed and Acceptance of Notice
- s. Work Change Directive(s)
- t. Change Order(s)
- u. 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 \_\_\_\_\_, 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 General Conditions. 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 **360 consecutive calendar days** from said date plus any modifications thereof allowed in accordance with the Contract Documents (the "Completion Date").

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

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

complete. Within 60 days after the submission of a pay request and one of the following occurs, as specified in the Contract Documents, PWC, with written consent of the surety, shall release to Contractor all retainage on payments held by PWC: (i) PWC receives a certificate of Substantial Completion from the Designer in charge of the Project; or (ii) PWC receives beneficial occupancy or use of the Project; provided, however, PWC may in its discretion retain sufficient funds to secure Completion of the Project or corrections on any Work. If PWC retains funds, the amount retained shall not exceed two and one-half times the estimated value of the Work to be completed or corrected. Any reduction in the amount of the retainage on payments shall be with the consent of Contractor's surety. The existence of any third-party claims against Contractor or any additive change orders to the Construction Documents shall not be a basis for delaying the release of any retainage on payments. Notwithstanding anything in this Section to the contrary, following fifty percent (50%) completion of the Project, PWC shall be authorized to withhold additional retainage from a subsequent periodic payment, not to exceed five percent (5%), in order to allow PWC to retain two and one-half percent (2.5%) total retainage through the Completion of the Project. In the event that PWC elects to withhold additional retainage on any periodic payment subsequent to release of retainage on a line-item of Work pursuant to G.S. 143-134.1(b2), Contractor may also withhold from the subcontractors remaining on the project sufficient retainage to offset the additional retainage held by PWC, notwithstanding the actual percentage of retainage withheld by PWC of the Project as a whole. Neither PWC's nor Contractor's release of retainage on payments as part of a payment in full on a line-item of Work pursuant to G.S. 143-134.1(b2) shall affect any applicable warranties on Work done by Contractor or subcontractor, and the warranties shall not begin to run any earlier than either PWC's receipt of a certificate of Substantial Completion from the Designer in charge of the Project or PWC receives beneficial occupancy.

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

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

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

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

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

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

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

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

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

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

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

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

k. Contractor has no business or personal relationship with any PWC Commissioner, officer, director, manager, or supervisor and Contractor covenants to disclose immediately to PWC any such relationship that develops

during the performance of Work on the Project.

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

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

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

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

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

submit them to PWC for approval.

14. Assignment. This Agreement shall be binding upon and inure to the benefit of the Parties, their legal representatives, successors, and assigns. Contractor may not assign, transfer, convey, or encumber, whether voluntarily or by operation of law, this Agreement or any obligations, rights under, or interests in this Agreement to a third party without the prior written consent of PWC; and, specifically, but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

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

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

17. Warranty. The Contractor hereby grants to PWC a warranty on all materials and Workmanship involved in the Project for a period of one (1) year from the Completion Date and a period of two (2) years from the Completion Date for any latent structural defects. PWC shall

give written notice to Contractor of any claim under this Section within the time specified hereinabove. This warranty shall be in addition to, and not in derogation of, all other rights and privileges which PWC may have under law, equity, or instrument, and shall survive the Completion Date and the final settlement and shall be binding on Contractor notwithstanding any provision in any other writing executed by PWC heretofore or contemporaneous with the execution of the Agreement or prior to the Completion Date.

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

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

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

21. Execution; Modification; Entire Agreement; Severability. This Agreement may be executed in counterparts with the same effect as if the signatures to each counterpart were upon a single instrument, and all such counterparts together shall be deemed an original of this Agreement. For purposes of this Agreement, a facsimile copy or scanned copy or photocopy of a party's signature shall be sufficient to bind such party. This Agreement shall be subject to execution by electronic means in accordance with Article 40 of Chapter 66 of the North Carolina General Statutes. No oral communication, promise, understanding, or agreement before, contemporaneous with, or after the execution of this Agreement shall affect or modify any of the terms and conditions and obligations of the Contract Documents. The Contract Documents shall be modified only by a subsequent writing signed by both Parties. The Contract Documents shall be conclusively considered to contain and express all the terms and conditions agreed upon by the Parties, notwithstanding any prior or contemporaneous written communication, promise, understanding or agreement. Should any provision of this Agreement or any of the Contract Documents at any time be in conflict with any law, statute, rule, regulation, order, or ruling and thus be unenforceable, or be unenforceable for any other reason, then the remaining provisions of this Agreement shall remain in full force and effect and the court or arbitrator shall give the offending provision the fullest meaning and effect permitted by law. The titles of the Sections throughout this Agreement are for convenience only and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction, or meaning of the provisions of this instrument.

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

To PWC:  
Fayetteville Public Works Commission  
Attn: Timothy Bryant, CEO/General Manager  
PO Box 1089  
Fayetteville, NC 28302

To Contractor:

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

- a. Persistently fails to prosecute the Work properly and in accordance with this contract, including but not limited to include failure to provide sufficient crews, equipment, or resources, or failure to adhere to the schedule;

- b. Demonstrates disregard for the policies, procedures, or requirements of PWC;
- c. Demonstrates complete disregard of the authority of PWC or its designated representatives; or
- d. Violates in any substantial way the provisions and requirements of this Agreement.

Such termination shall be effective upon written notice to Contractor and its surety. PWC may terminate the contract for its convenience by providing Contractor at least seven (7) calendar days prior written notice, in which event Contractor shall be paid for all Work completed, plus other expenses as mutually agreed upon between PWC and Contractor.

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

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

Fayetteville Public Works Commission

**CONTRACTOR**

**[PER OUR CHARTER (SEE SEC 6A.20),  
THE CONSTRUCTION CONTRACT, IF MORE  
THAN \$500K, MUST BE BETWEEN THE CITY  
(BY AND THROUGH PWC) AND THE CONTRACTOR]**

By: \_\_\_\_\_  
Timothy Bryant, CEO/GM

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:

\_\_\_\_\_  
Legal Dept.

SAMPLE



GENERAL CONDITIONS FOR  
FAYETTEVILLE PUBLIC WORKS COMMISSION

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## **General Conditions**

### **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.

- (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) **Cost of the Work**
  - A. Costs Included: To determine Cost of the Work when Cost of the Work is a component of the Contract Price, except as otherwise may be agreed to in writing by PWC, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the excluded costs specifically itemized below, and shall include only the following items:
    - (i) Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers’ compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
    - (ii) Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers’ field services required in connection therewith. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
    - (iii) Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor’s Cost of the Work and

fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this subsection (p).

(iv) Supplemental costs including the following:

- a. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
- b. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- c. The cost of utilities, fuel, and sanitary facilities at the Site.
- d. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

(i) Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications agreed upon by Owner and Contractor. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

(ii) Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

(iii) Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

(iv) Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

(v) Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included herein.

(vi) Contractor's fee.

A. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records of the Cost of Work in accordance with generally accepted accounting practices and submit in a form acceptable to PWC an itemized cost breakdown together with supporting data.

(q) 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."

- (r) 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.
- (s) Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
- (t) 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.
- (u) Final Completion—The day the on which any specified Work is complete in accordance with the Contract Documents.
- (v) Hazardous Environmental Condition—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract Documents, does not establish a Hazardous Environmental Condition.
- (w) 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.
- (x) 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.
- (y) Non-Compliance Notice—A written notice issued by PWC to Contractor indicating a violation of any term, provision, or requirement of the Contract Documents.
- (z) 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.
- (aa) 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.
- (bb) 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.
- (cc) 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.

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- (dd) 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.
- (ee) PWC—Fayetteville Public Works Commission. PWC may also be referred to in the Contract Documents as “Owner.”
- (ff) 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.
- (gg) 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.
- (hh) 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.
- (ii) 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.
- (jj) 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.
- (kk) 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.
- (ll) 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.
- (mm) 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.
- (nn) Successful Bidder—The Bidder whose Bid PWC accepts, and to which PWC provides a Notice of Award.
- (oo) Supplementary Conditions—Any part of the Agreement that amends or supplements these General Conditions.

- (pp) 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.
- (qq) 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.
- (rr) 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.
- (ss) Unit Price Work—Work to be paid for on the basis of unit prices.
- (tt) 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.
- (uu) 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

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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.

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;
  - (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.

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- (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.
- (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

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- (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 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

- (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**

#### 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

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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.
- (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

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- (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 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.
  - (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

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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 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 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.
  - (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.

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- (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.
- (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

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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 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.<sup>8</sup>

### 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:
      - 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

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- 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.
- (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.

#### 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

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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 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;
  - (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

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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 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 any Hazardous Environmental Condition 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 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, 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.
- (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 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:
  - (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 Documents 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, 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 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.
- (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.

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- (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.
  - (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.

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- (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 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 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

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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 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.

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:
  - (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

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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 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

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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 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.
- (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.
- (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.

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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

- (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

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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.

**DIVISION I**  
**01000 – SUPPLEMENTARY CONDITIONS**

1.01 Summary

- A. The project consists of 6,360 linear feet of 8-inch gravity sanitary sewer, 610 linear feet of 8-inch restrained joint ductile iron aerial crossings, 41 sanitary sewer laterals and 34 manholes, approximately 1,033 linear feet of 8-inch sanitary sewer in 24-inch encasement by bore and jack, 31 linear feet of 8-inch sanitary sewer in 24-inch encasement by open cut, 1,700 linear feet of 12-inch water mains and 55 linear feet of 12-inch water main. The project includes bypass pumping, stream crossings, stream bank stabilization, trenchless construction, aerial crossings, asphalt pavement patch, sod installation and restoration, as well as testing and acceptance of the gravity sanitary sewer and water mains. All work shall be done in accordance with the terms and conditions outlined herein, Fayetteville Public Works Commission (PWC) “Manual for the Design and Construction of Water and Wastewater System Extensions” (most recent edition), in accordance with the NCDOT Standard Specifications for Roads and Structures (most recent edition), and subject to final approval and acceptance by Fayetteville Public Works Commission.

1.02 Stored Materials

- A. The option to incorporate stored materials shall be addressed prior to the first pay estimate. The Contractor will not be permitted to request payment for stored materials on future pay applications once the first application has been signed by the Contractor and submitted to the Owner. If considered for payment, stored materials shall be delivered and stored to the satisfaction of the Project Coordinator. Stored material estimates must be submitted in a form acceptable to the Project Engineer. All invoices shall accompany the pay estimates and be separated by the associated project “Part” (i.e. Part A, Part B, etc.). Stored materials shall be paid for according to eighty-five percent (85%) of the actual invoice value including sales tax.

1.03 Materials

- A. All materials to be utilized are to be in new condition. Materials are to be stored in strict accordance with the manufacturer’s directions. Materials are to be of the type and brand specified within these Contract Documents. No alternative or substitute materials shall be considered prior to award of the Contract.
- B. The Contractor shall submit all requests to utilize materials other than specified to Fayetteville Public Works Commission for review. The Contractor shall be responsible for providing all required documentation necessary for Fayetteville Public Works Commission to review and make a determination if the substitute material meets the required specification.
- C. The Contractor will be responsible for providing documented proof that the proposed substitution has a proven record of performance when used in the intended application as confirmed by actual field test(s) or by successful installations. 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.

1.04 Weight/Quantity Tickets

- A. Weigh/quantity tickets shall be required for those Contract quantities that are not measured in place, including but not limited to select material and undercut excavation. Work of this nature requires the Project Engineer or Project Coordinator's approval prior to beginning or the Project Engineer reserves the right not to pay for unauthorized work.
- B. All quantity tickets for items not measurable in place shall be submitted to the Project Coordinator. Each ticket shall indicate the date, Contractor, job location, name of project, quantity of material, truck number and signature of the Contractor. The Contractor shall furnish the tickets to the Project Coordinator by the end of the next working day. No tickets shall be accepted after that time unless otherwise authorized by Project Engineer.
- C. When a material is to be paid for on a per ton basis (i.e, material for undercut excavation), the weighing devices shall be certified by the N.C. Department of Agriculture. All scales shall be operated by a public weigh master licensed in accordance with the North Carolina General Statues. A certified weigh certificate shall be issued for each load and contain the following information:
  - 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
- D. The Project Engineer and/or the Project Coordinator may direct the Contractor to re-weigh the contents of any truck load that is delivered to the project on approved platform scales at no additional cost to the Owner.
- E. When material is to be paid for on per cubic yard basis (i.e., select backfill), the payment shall be based on 75% of the gross volume of the truck(s) hauling the material. The truck ticket shall include the gross volume of the truck.



**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: PWC2526034 - PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST SECTION II**

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: PWC2526034 - PHASE V ANNEXATION PROJECT XV CONSTRUCTION  
AREA 32 EAST SECTION II**

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: PWC2526034 - PHASE V ANNEXATION PROJECT XV CONSTRUCTION AREA 32 EAST SECTION II**

You are hereby notified to commence work in accordance with the Contract dated \_\_\_\_\_, 2026, on or before \_\_\_\_\_, 2026, and you are to complete the WORK within the **contract period** thereafter. The date of final completion therefore is \_\_\_\_\_.

**FAYETTEVILLE PUBLIC WORKS COMMISSION**

BY: \_\_\_\_\_

Nikole Bohannon

Procurement Manager

**ACCEPTANCE OF NOTICE**

Receipt of the above NOTICE TO PROCEED

is hereby acknowledged this the \_\_\_\_\_ day of \_\_\_\_\_, 2026.

**(CONTRACTOR)**

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

- END OF SECTION -

## **SECTION C - ADMINISTRATIVE PROVISIONS**

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**DIVISION I  
1025 MEASUREMENT AND PAYMENT**

**GENERAL**

- A. 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.
- B. 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 and drawings; 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.
- C. Certain items of work listed hereinafter may not be required on this project and shall be denoted as not applicable.
- D. Certain bid items have been designated to conform to maximum payment widths and/or lengths and no additional payment therefore will be allowed unless otherwise approved by the Owner. These designated items will be as identified in the Bid Form, Technical Specifications and as may be indicated on the Contract Drawings. The designation of these items of work shall be noted as "No Overage Allowed" or "NOA". Prospective bidders shall be responsible for verifying that the actual quantities of work are listed in the Bid Form prior to submitting bids, and include all costs (regardless of whether the Bid quantities are over or under the quantities indicated on the plans) in the unit price bid.

**THE FOLLOWING PAYMENT ITEMS ARE APPLICABLE IN ALL PARTS A,B,C,D,G**

**General**

G-1 **MOBILIZATION AND DEMOBILIZATION**

- A. Payment under the lump sum bid price shown under each PART of the Bid Form includes costs associated with mobilizing to the project site, including permits, licenses, insurance, bonds, the mobilization of personnel and equipment and other related costs. Fifty percent (50%) of the mobilization costs will be paid as part of the first payment application, and the remaining fifty percent (50%) as part of the second payment application submitted. Payment also includes all costs associated with demobilizing personnel and equipment from the project site upon completion of work.

G-2 **TRAFFIC CONTROL**

- A. Payment under the lump sum bid price shown under each PART of the Bid Form shall include all costs associated with traffic control throughout the project, including the development of a traffic control plan, furnishing, installing and maintaining all traffic control signage and devices, relocating or removing existing

signs or other traffic control devices, replacement of street signs, and any other necessary traffic control devices and coordinating with the municipality and/or NCDOT to minimize disruption to the public.

- B. All traffic control plans, devices, signage, traffic patterns, and road closures must be submitted to and approved by the municipality and/or NCDOT prior to implementation.
- C. Payment under this item shall be made monthly. Payments are not to exceed 10% of the total lump sum per month, based on the estimated percentage of work completed as determined by the Project Coordinator or Project Engineer.
- D. The Contractor is responsible for furnishing and maintaining adequate traffic control. Failure to do so may result in the withholding of payments until corrective measures are in place.
- E. The use of improper signage or traffic control devices is not permitted. The municipality, NCDOT, and/or PWC reserve the right to direct the contractor to relocate or remove non-conforming signs and devices, install proper measures to ensure public safety, and deduct all costs incurred by PWC for these actions. The Contractor shall not be entitled to any compensation for such work performed.

G-3 EROSION AND SEDIMENT CONTROL

- A. Payment under the lump sum bid price shown under each PART of the Bid Form shall include all costs associated with installing, maintaining, and removing erosion and sedimentation control measures throughout the project in accordance with the approved erosion and sedimentation control plan and any supplemental plans, and any other measures required by applicable regulatory agencies.
- B. Payment under this item shall be made monthly. Payments are not to exceed 10% of the total lump sum per month, based on the estimated percentage of work completed as determined by the Project Coordinator or Project Engineer. No payment will be made for any work resulting from inadequate or improperly installed or maintained measures.
- C. The Contractor is responsible for furnishing and maintaining adequate erosion control. Failure to do so may result in the withholding of payments until corrective measures are in place.
- D. The use of improper erosion control devices is not permitted. PWC reserves the right to direct the contractor to relocate or remove non-conforming erosion control devices, install proper measures to ensure public safety, and deduct all costs incurred by PWC for these actions. The Contractor shall not be entitled to any compensation for such work performed.
- E.

G-4 CLEARING AND GRUBBING

- A. Payment under this item shall be measured and paid to the nearest one hundredth of an acre. The unit price includes all work as noted for easements, public rights-of-way, and within limits of disturbance and shall include protection of all trees, floral bushes, or plants not to be removed or disturbed. The unit price includes the costs for 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. The unit price also includes all work as noted for easements, public rights-of-way, and within the limits of disturbance, and shall also include protection of all trees, floral bushes, or plants not to be removed or disturbed.
- B. Areas containing and requiring cutting and removal of weeds, grass, grain, annual or perennial plants, or sapling less than one inch shall not be measured and paid for as clearing and grubbing. Payment shall be based on the horizontal area cleared and grubbed as designated on the plans or as directed by the Owner. Measurement will be made to the nearest one hundredth of an acre.

G-5 SOD (NO OVERAGES ALLOWED)

- A. Payment under this item shall be measured per square yard of sod installed and accepted. The unit price includes all costs associated with installing and maintaining sod. Measurement of this line item will be based on the actual square yards of SOD installed, completed, and accepted. This includes stripping of topsoil, providing topsoil as necessary, fine grading, spreading, leveling, and compaction of suitable topsoil, anchoring, placing sod, applying pest and disease control, adding soil amendments, fertilizing, maintaining, removal and replacement of unacceptable sod, watering, and all labor, materials, tools, equipment, and incidentals necessary to complete the work.
- B. No payment will be made for placing sod in collateral damage areas outside of easements, rights-of-ways, limits of disturbances, or other areas disturbed by the Contractor.

**Maximum Pay Widths for Sod**

Permanent Easements		20' (or as indicated on the plans)
Temporary Easements		10' (or as indicated on the plans)
Storm Drainage		15'
Water Mains	12'	
Sanitary Sewer Laterals		6'
Water Laterals		4'

G-6 TEMPORARY SEEDING (NO OVERAGES ALLOWED)

- A. Payment under this item shall be measured and paid to the nearest one hundredth of an acre, for seeding of wetland areas, easements and along rights-of-way. The unit price for seeding includes all costs for the placement and

grading of topsoil, soil preparation, applying pest control, disease control, placing soil amendments, grading, raking, seeding, fertilizing, mulching, crimping, watering, maintenance, reseeding if required, tack, and all other incidentals necessary to complete the work.

- B. No payment will be made for seeding any collateral damage areas outside of permanent and temporary easements and along rights-of-ways or other areas disturbed by the Contractor.
- C. Stripping of topsoil will not be measured and paid for as a separate bid item. All work related to topsoil shall be included within the unit price for Seeding

G-7 WETLAND SEEDING (NO OVERAGES ALLOWED)

- A. Payment under this item shall be measured and paid to the nearest one hundredth of an acre, for seeding of wetland areas. The unit price for seeding includes all costs for topsoil, soil preparation, pest control, disease control, placing soil amendments, grading, raking, seeding, fertilizing, mulching, crimping, watering, maintenance, reseeding if required, tack, and all other incidentals necessary to complete the work in accordance with the approved regulatory permits and any other measures required by applicable regulatory agencies..
- B. No payment will be made for seeding any collateral damage areas outside of permanent and temporary easements and along rights-of-ways..
- C. Stripping of topsoil will not be measured and paid for as a separate bid item. All work related to topsoil shall be included within the unit price for Seeding

G-8 BORROW EXCAVATION

- A. Payment under this item shall be measured by cubic yards of select material compacted in place. The unit price includes all costs necessary to furnish and install select backfill material. This includes acquiring, transporting, and placing and compacting select backfill material, removal and disposal of unsuitable material off-site, compacting the select backfill material in place, and all labor, materials, equipment, and incidentals necessary to complete the work.
- B. Payment will be made at the applicable unit price as listed in the Bid Form. The actual quantity considered for payment shall be 75% of the volume indicated on the submitted certified scale ticket. PWC reserves the right to verify the actual amount of material in place. Borrow excavation material shall be supplied by the Contractor from an approved off-site borrow area. Materials utilized on-site within the Project limits or within the fee haul limit (defined as a two-mile radius from the project site) will not be considered for payment as borrow excavation. Disposal of unsuitable and/or suitable excavated material will not be paid for as a separate bid item.

G-9 INSTALL 6 FOOT CHAIN LINK DOUBLE GATE ACROSS EASEMENTS

Payment under this line item shall be measured as each for the number of gates installed. Double gates will be measured for payment as one gate. The unit price includes all costs associated with finishing and installing double gates in accordance with PWC Standards. The Contractor shall match existing fence material or install the material indicated on the plans or in the special conditions. Work shall include all materials, equipment, tools, labor, posts, braces, concrete, gates, fitting, removal and proper disposal of material off-site and any other incidentals necessary to complete the work.

**Street Construction**

A-1 PERMANENT PAVEMENT PATCH (NO OVERAGE ALLOWED, NOA)

Payment under this item shall be measured and paid by square yard, not to exceed the maximum contract pay widths. The unit price for Permanent Asphalt Pavement Patch includes all costs for placing a minimum of two (2) inches of Asphalt Pavement Surface Course (SF9.5B) and eight (8) inches of Aggregate Base Course (ABC), in accordance with PWC’s standards. Payment widths shown include a minimum cutback of six (6) inches on each side of the trench prior to placing pavement patch. Any pavement removed or damaged beyond the limits specified shall be replaced at the Contractor at his own expense unless directed otherwise by the Project Coordinator or the Project Engineer.

No payment for overage beyond the quantity shown in the Bid Form will be made. The unit price includes saw cutting pavement to straight uniform widths parallel and perpendicular to the road, removing and disposing of asphalt off-site, compacting pavement subgrade, placing and compacting ten (10) inches of ABC, maintaining ABC stone at pavement grade until removal of the upper two (2) inches for paving, installing and maintaining transitions, adjusting structures, applying tack coat, placing and compacting of asphalt material, cleanup, and all costs for labor, materials, tools, equipment, and incidentals necessary to complete the Work.

**Maximum Pay Widths for Permanent Asphalt Pavement Patch**

Storm Drainage	6'	(for pipe 24" in diameter and less)
Storm Drainage	8'	(for pipe 30" up to 42" in diameter)
Storm Drainage	10'	(for pipe 48" up to 54" in diameter)
Storm Drainage	12'	(for pipe greater than 54")
Sanitary Sewer	10'	(0' to 10' depth, measured to invert of pipe)
Sanitary Sewer	12'	(greater than 10' depth, measured to invert of pipe)
Sewer Laterals	6'	
Water Main	4'	
Water Services	4'	

A-2 PERMANENT PAVEMENT PATCH FAILED AREAS - No Overage Allowed (NOA)

Payment for this item shall be made at the unit price per square yards as listed

in the Bid Form, in place and accepted, within areas identified by the City of Fayetteville or the Project Coordinator as "failed areas" outside the specified trench limits. Payment will be made to the nearest square yard total. No payment will be made for any work exceeding the quantity specified in the Bid Form. The unit price includes all costs for removing the failed pavement in applicable areas, replacing it with two (2) inches of Asphalt Pavement Surface Course and eight (8) inches of Aggregate Base Course (ABC), including saw cutting pavement to straight uniform widths, removing and disposing of asphalt off-site, re-compacting pavement subgrade, placing and compacting ten (10) inches of ABC, maintaining ABC stone at pavement grade until removal of the upper two (2) inches for paving, installing and maintaining transitions as required, adjusting structures as required, applying tack coat, placing and compacting asphalt material, cleanup, and all labor, materials, tools, equipment, and incidentals necessary to complete the work.

The Contractor is responsible for replacing any pavement removed or damaged by their operations beyond the specified area of the failed pavement at their own expense, unless directed otherwise by the Project Coordinator or the Project Engineer.

A-3 UNDERCUT EXCAVATION IN ASPHALT SUBGRADE (NOA)

Payment under this item shall be measured by cubic yards of unsuitable material excavated below the bedding limit line as per PWC Specification. Payment will not be made without prior authorization by the PWC project Coordinator.

Payment shall be based on the internal diameter of the pipe plus a minimum of 1 feet on both sides of the pipe, and on the authorized additional depth required to adequately support the pipeline. Payment for structures shall be based on the external diameter/dimension of the structure plus a minimum of two (2) feet around the perimeter of the structure, to the authorized depth required to adequately support the structure. The unit price includes the cost for all labor, tools, materials, and equipment including but not limited to the removal and disposal of unsuitable soil off-site, furnishing, and placing stone bedding material, and all other incidentals necessary to complete the work.

No payment will be made for unapproved over-excavation or where proper dewatering efforts and methods are not in place for excavation stabilization.

A-4 REMOVE AND REPLACE CONCRETE DRIVEWAYS (NOA)

Payment under this item shall be made at the unit price bid per square yard. Concrete driveways shall be installed in accordance with the Contract Requirements. Payment shall be made to the nearest square yard. Payment shall be full compensation for saw cutting and removing the existing driveway, removing and disposing of excess or unsuitable materials off-site, grading, compaction, expansion joint materials, form

work, backfilling beside with topsoil, and all equipment, tools, labor, and incidentals necessary to complete the work.

A-5 INCIDENTAL STONE

Payment under this item shall be measured at the unit price per ton. Incidental Stone shall be authorized by the Project Coordinator or Project Engineer to be placed for the maintenance of driveways and street intersections. The unit price includes all costs for labor, tools, materials, equipment, furnishing, placing, supplementing stone required for maintenance, grading/leveling stone, wetting, compaction, removing and disposing of incidental stone prior to pavement patch.

The Contractor shall furnish a "certified scale ticket" with each load of stone to the Project Coordinator by 5:00 pm the following business day to be considered for payment. Incidental stone that is stockpiled will not be considered for payment.

No separate payment shall be made for incidental stone placed in mainline or service lateral trenches unless authorized by the Project Coordinator or Project Engineer.

A-6 MAINTENANCE STONE (NOA)

Payment under this item shall be measured per square yard in place.

Maintenance stone (#57) shall be authorized by the Project Engineer or Project Coordinator to be placed for the maintenance of street trenches. The unit price includes all costs for labor, tools, materials, equipment, furnishing, placing, supplementing stone required for maintenance, compaction, removal and disposal of all maintenance stone prior to placement of permanent asphalt pavement patch.

To be considered for payment, maintenance stone shall be at a minimum depth of four (4) inches and a minimum length of fifty (50) feet. Payment shall be made based upon the actual width in place, not to exceed the allowable trench widths.

No separate payment shall be made for incidental maintenance stone placed in mainline or service lateral trenches unless authorized by the Project Coordinator or Project Engineer.

A-7 REPLACE GRAVEL/SOIL DRIVEWAY WITH AGGREGATE BASE COURSE

Payment under this item shall be made at the unit price bid per square yard. Gravel/soil driveways shall be installed in accordance with the Contract requirements. Payment shall be made to the nearest square yard. Payment shall be full compensation for the removal of the existing driveway, acquiring and placing the aggregate, removing and disposing of excess or unsuitable materials off-site, grading, compaction, and all equipment, tools, labor, and incidentals necessary to complete the work.

A-8 REMOVE AND REPLACE ASPHALT DRIVEWAYS (NOA)

Payment under this item shall be made at the unit price bid per square yard. Asphalt driveways shall be installed in accordance with the Contract requirements. Payment shall be made to the nearest square yard. Payment shall be full compensation for saw cutting and removing the existing driveway, removing and disposing of excess or unsuitable materials off-site, grading, acquiring and placing the asphalt, compaction, backfilling beside with topsoil, and all equipment, tools, labor, and incidentals necessary to complete the work.

### **Storm Drainage**

**B-1 REMOVE AND REPLACE WITH NEW PIPE 15" CL IV RCP 0'-6' DEPTH**

Payment for this item shall be measured and paid at the unit price bid per linear foot as indicated in the Bid Form. Payment per linear foot of storm drainage pipe will be made under the applicable unit price for each size of pipe installed, type and pay depth as indicated in the Bid Form. Payment shall include the cost for excavation, removal and disposal of indicated existing pipe, bedding stone, shoring, removal and disposal of excess unsuitable material off site, installation of proposed drainage pipe, installation of concrete collars, grading, backfilling, dewatering, compaction and all other work required for a complete installation.

### **Water**

**C-1 DUCTILE IRON WATER MAIN INSTALLATION**

Payment under this item shall include all costs necessary to install ductile iron water main in accordance with AQUA Standard Specifications. Work under this item shall include all costs for excavation, shoring, backfill, thrust blocking, compaction, fittings, removal of pavement, installation of the pipe at the specified line and grade, bedding material, removal and disposal of excess unsuitable material off-site, and all labor, materials, equipment, and incidentals necessary to complete the work.

**C-2 RESTRAINED JOINT DUCTILE IRON WATER MAIN**

Payment under this item shall include all costs necessary to install the restrained joint ductile iron water main in accordance with AQUA Standard Specifications. Work under this item shall include all costs for excavation, shoring, backfill, compaction, fittings, removal of pavement, and installation of restrained joint pipe as specified in the drawings or as required by AQUA standards, bedding material, removal and disposal of excess unsuitable material off-site, and all labor, materials, equipment, and incidentals necessary to complete the work.

**C-3 GUIDED BORE & JACK**

Payment under this item shall include all necessary costs to install the casing and carrier pipe in accordance with PWC standards. Work shall include all costs for excavation, shoring, removal and disposal of excess unsuitable material off-site, bedding material, horizontal and vertical controls, bore steering mechanisms, steel casing, casing spacers, concrete

grouting and closures, installation of the restrained joint ductile iron carrier pipe, backfill, compaction, and all labor, materials, equipment, and incidentals necessary to complete the work.

C-4 UNDERCUT EXCAVATION

Payment under this item shall be measured and paid for by the volume in cubic yards of unsuitable material excavated below the bedding limit line of four (4) inches below the pipe as authorized by the Project Coordinator. Payment under this item shall be based on the width of two (2) feet plus the internal diameter of the pipe and on the authorized additional depth required for proper support of the pipeline. Payment under this item for structures shall be based on the width of two (2) feet plus the external diameter/dimension to the authorized depth required for proper support of the structure.

Payment under this item shall include the costs for all labor, tools, materials, and equipment including but not limited to the removal and disposal of unsuitable material off-site, approved bedding material, and all other incidentals necessary to complete the work. No payment under this item for undercut will be made for over-excavation by error or where proper dewatering methods are not in place for trench and/or excavation stabilization

C-5 RESTRAINED JOINT GATE VALVES

Payment under this item shall be measured by actual count, complete, in place. Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item shall include all costs necessary to install the gate valve and valve box. All gate valves shall be installed in accordance with PWC standard details. Work under this item shall include removal of pavement, removal and disposal of excess unsuitable material off-site, excavation, shoring, backfill, compaction, installation, valve boxes, retaining glands, concrete protection rings, concrete collars, tracing wire, and all equipment, tools, labor, and incidentals necessary to complete the work.

C-6 TAPPING SLEEVE & VALVE

Payment under this item shall be measured by actual count, complete, in place. Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item shall include all costs necessary to install the specified tapping sleeve and valve on the existing water mains. Work under this item shall include the removal of pavement, removal and disposal of excess unsuitable material off-site, excavation, shoring, backfill, compaction, determining the proper size sleeve, installation, testing of the sleeve, thrust blocking, concrete protection rings, concrete collars, valve boxes, tracing wire, and all equipment, tools, labor, and incidentals necessary to complete the work.

C-7 FIRE HYDRANT INSTALLATION

Payment under this item will be paid by actual count, complete, in place. Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item will be full compensation for furnishing and installing hydrants and hydrant branches in accordance with PWC standards, painting, stone drainage wells, anchorage, testing, excavation, shoring, backfill and compaction, removal, and disposal of pavement, gate valves and boxes, pipe, fittings, concrete protector rings, concrete collars, removal and disposal of excess unsuitable material off-site, tapping sleeve and valve where applicable, and hydrant barrel adjustments to finish grade, and all equipment tools, labor, and incidentals necessary to complete the work.

C-8 CONNECT TO EXISTING WATER MAIN

Payment under this item shall be paid by actual count, complete, in place. Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item shall include all necessary costs to connect to the existing water main. Payment under this line item will be full compensation for excavation, shoring, backfill, compaction, removal of the existing blow-off, tracing wire, removal and disposal of excess unsuitable material off-site, necessary fittings to connect to the new water main, and all equipment, tools, labor, and incidentals necessary to complete the work.

C-9 STERILIZATION & TESTING

Payment under this line item shall include all costs necessary to perform the required testing on the water mains, laterals, and appurtenances. Work shall include all costs for furnishing test equipment, installation and abandonment of temporary taps for testing and/or disinfection, coordination with the Project Coordinator, and all labor, materials, equipment, and incidentals necessary to complete the work. The Contractor shall be responsible for proper abandonment of all unnecessary taps and fittings upon completion of the work. Payment under this line item will not be made until all required tests are successful.

C-10 WELL ABANDONMENT

Payment under this item shall include all costs to abandon existing wells in accordance with NCDEQ requirements. Work shall include, but not be limited to, chlorinating the well before sealing, perforating the well casing, filling the well with cement, grout, dry clay, and/or gravel, furnishing all necessary records to NCDEQ, furnishing all records and confirmations of receipt of records by NCDEQ to PWC, removal and disposal of the existing well house/pumphouse, removal and disposal of piping, removing the pump and providing it to the property owner, disconnecting any electrical components from the power source to the well pump, disconnecting and plugging existing plumbing, restoration of the property with sod, and any other incidentals necessary to complete the work. Seal abandoned wells at locations shown in the contract or as directed. Perform all work in

accordance with NCDEQ requirements.

## **Sewer**

### **D-1 Polyvinyl Chloride (PVC) SANITARY SEWER**

Payment under this item shall be made per linear foot of sanitary sewer at the applicable unit prices for each size and pay depth as indicated on the Bid Form. Payment under this item shall include all costs necessary to furnish and install the specified sewer main in accordance with PWC standards. Work shall include all costs for excavation, shoring, backfill, compaction, dewatering, the cutting and removal of pavement, proper disposal of unsuitable material off-site, installation of the pipe at the specified line and grade, stone bedding, and all labor, materials, equipment, and incidentals necessary to complete the work. All pipe segments installed must have passed the contract compaction requirements in order to be considered for payment.

### **D-2 Ductile Iron Pipe (DIP) SANITARY SEWER**

Payment under this item shall be made per linear feet of sanitary sewer at the applicable unit prices for each size and depth indicated on the Bid Form. Payment under this item shall include all costs necessary to furnish and install the specified sanitary sewer main, in accordance with PWC standards. Work shall include all costs for excavation, shoring, backfill, , compaction, bedding stone, dewatering, cutting and removing of pavement, coatings, all necessary fittings, stone bedding, proper disposal of unsuitable material off-site, installation of the sewer main at the specified line and grade, and all labor, materials, tools, equipment, and incidentals necessary to complete the work.

All pipe segments must have passed the detailed compaction requirements to be considered for payment.

### **D-3 GUIDED BORE & JACK**

~~D-4~~Payment under this item shall include all necessary costs to install the casing and carrier pipe in accordance with PWC standards. Payment shall include all costs for excavation, shoring, removal and disposal of excess unsuitable material off-site, bedding material, horizontal and vertical controls, bore steering mechanisms, steel casing, casing spacers, concrete grouting and closures, installation of the restrained joint ductile iron carrier pipe, backfill, compaction, and all labor, materials, equipment, and incidentals necessary to complete the work.

### **D-5 SANITARY SEWER MANHOLE**

Payment under this item shall include all costs necessary to furnish and install various diameter and depths of manholes as specified on the plans. Payment per each manhole shall be made at the applicable unit prices for each size and pay depth as indicated on the Bid Form. Payment shall include all costs for excavation, shoring, backfill, adjustments to proper elevations, proper removal and disposal of unsuitable material off-site, linings, anti-microbial additives, inverts, pipe slides, dewatering, compaction, cutting and removal of pavement, stone bedding, installation of the manhole in accordance with PWC standards, installation of the specified frame and

cover, adjustment rings, concrete collar, and all labor, materials, equipment, and incidentals necessary to complete the work.

D-6 SANITARY SEWER DOGHOUSE MANHOLE

Payment under this item shall include all costs necessary to furnish and install various diameter and depths of doghouse manholes as specified on the plans. Payment per each doghouse manhole shall be made at the applicable unit prices for each size and pay depth as indicated on the Bid Form. Payment shall include all costs for excavation, shoring, backfill, adjustments to proper elevations, proper removal and disposal of unsuitable material off-site, linings, anti-microbial additives, pipe slides, inverts, dewatering, compaction, cutting and removal of pavement, installation of the specified frame and cover, adjustment rings, stone bedding, removal of the existing pipe, concrete collar, and all labor, materials, equipment, and incidentals necessary to complete the work.

D-7 ABANDON EXISTING MANHOLE

Payment under this item shall be paid by actual count, complete, in place. Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item shall include all necessary costs to abandon existing manholes. Payment shall include all costs to remove the manhole cone or entire manhole if required, excavation, shoring, backfill of the manhole with select material or flowable fill, dewatering, proper removal and disposal of unsuitable material off-site, proper disposal of any abandoned manhole pieces, cones, risers, bases, removal and returning the frame and cover to PWC, compaction, and all labor, materials, equipment, and incidentals necessary to complete the work.

D-8 ABANDON EXISTING LATERAL

Payment under this item shall be paid by actual count, complete, in place. Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item shall include all necessary costs to abandon existing sewer laterals as indicated on the plans. Payment shall include all costs for excavation, shoring, dewatering, backfill, cutting and removal of pavement, proper removal and disposal of excess unsuitable material off-site, removal of the existing lateral pipe at the main, installing a plug at the main to lateral connection, compaction, removal of the existing combination and cleanout stack, installing a plug on the end of the lateral pipe, any specific direction by the Project Coordinator or Project Engineer, and all labor, materials, equipment, and incidentals necessary to complete the work.

D-9 ABANDON EXISTING SEWER MAIN

Payment under this item shall be paid by linear feet of sewer main that is grout filled. Payment will be made at the applicable Contract unit price for the specified size water sanitary sewer main as listed on the Bid Form. The unit price shall include all costs for dewatering, grouting, plugging and

capping the existing pipe and appurtenances, the removal of pavement, removal and disposal of excess unsuitable material off-site, excavation, backfill, compaction, and all labor, materials, equipment, and incidentals necessary to complete the work. Grouting of existing sewer mains shall not occur before PWC has accepted the new sewer mains and laterals. This item shall be measured by linear feet of grout fill, complete and in place. Payment shall be made at the applicable unit price as listed in the Bid Form.

**D-10 RECONNECT SEWER LATERAL TO EXISTING PLUMBING**

Payment under this item shall be paid by actual count, complete, in place.

Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item shall include all costs necessary to connect from the PWC lateral to the customer's existing sewer service. The work shall be in accordance with the Plumbing code and City of Fayetteville requirements. Payment shall include all costs to install cleanouts, permits, coordination with the property owner, excavation, shoring, dewatering, backfill, compaction, connection to the existing lateral, and all labor, materials, equipment, and incidentals necessary to complete the work.

**D-11 INTERIOR DROP STRUCTURE**

Payment under this item shall be paid by actual size and count, complete, in place, at the unit price bid as listed on the Bid Form. Payment shall include all costs necessary to install the specified inside drop structure in accordance with PWC standards. Work shall include all costs for pipe, fittings, stainless steel straps, anchors, and all labor, materials, equipment, and incidentals necessary to complete the work.

**D-12 PVC SANITARY SEWER LATERAL**

Payment under this item shall be paid by actual count, complete, in place.

Payment will be made at the unit price bid as listed in the Bid Form. Payment under this item shall include all costs necessary to furnish and install a PVC sanitary sewer lateral in accordance with PWC standards. Payment shall include all costs for excavation, shoring, backfill, compaction, cutting and removal of pavement, proper removal and disposal of unsuitable material off-site, dewatering, marking the location of the lateral on the curb or edge of pavement, installation of a cleanout, all necessary fittings, stone bedding, installation of the lateral at the specified line and grade, and all labor, materials, equipment, and incidentals necessary to complete the work. All laterals installed must have passed the contract compaction requirements in order to be considered for payment.

**D-13 DIP SANITARY SEWER LATERAL**

Payment under this item shall be paid by actual count, complete, in place.

Payment will be made at the applicable unit price bid as listed in the Bid Form. Payment under this item shall include all costs necessary to furnish and install a ductile iron sanitary sewer lateral in accordance with PWC standards. Payment shall include all costs for excavation, backfill,

compaction, the removal of pavement, removal and disposal of excess unsuitable material off-site, proper disposal of waste, dewatering, marking the location of the lateral on the curb or edge of pavement, installation of a cleanout, coatings, linings, all necessary fittings, stone bedding, installation of the lateral at the specified line and grade, and all labor, materials, equipment, and incidentals necessary to complete the work. All laterals installed must have passed the contract compaction requirements in order to be considered for payment.

**D-14 CONNECTION TO EXISTING STRUCTURE**

Payment under this item shall be made at the unit price bid per each as listed in the Bid Form. Connections shall consist of coring the manhole, installing flexible boots, removing and re-building inverts, and sealing penetrations as required. Payment shall include all costs of equipment, labor, tools, materials, and all incidentals necessary to complete the work.

**D-15 UNDERCUT EXCAVATION**

Payment under this item shall be measured and paid for by the volume in cubic yards of unsuitable material excavated below the bedding limit line of four (4) inches below the pipe as authorized by the Project Coordinator. Payment shall be based on the width of two (2) feet plus the internal diameter of the pipe and on the authorized additional depth required for proper support of the pipeline. Payment for structures shall be based on the width of two (2) feet plus the external diameter to the authorized depth required for proper support of the structure.

Payment under this item shall include the costs for all labor, tools, materials, and equipment including but not limited to the removal and disposal of unsuitable soil, furnishing and placing stone bedding material, and all other incidentals necessary to complete the work. No payment for undercut will be made for over excavation by error or where proper dewatering methods are not in place for trench and/or excavation stabilization.

**D-16 TESTING**

Payment under this item shall include all costs necessary to perform the required testing (i.e., hydrostatic testing, air testing, mandrel, vacuum testing, etc.) on the sewer mains, low-pressure sewer systems, force mains, laterals, and manholes. Payment shall include all costs for furnishing test equipment, installing and abandonment of blow-offs, and all labor, materials, equipment, and incidentals necessary to complete the work. Payment under this line item shall not be made until all performed tests are successful. No extra payment will be made for laterals connecting directly to manholes.

**D-17 INSTALL CAM-LOCK RING & COVER ON EXISTING MANHOLE**

Payment under this item shall include all costs necessary to furnish and install cam-lock ring and cover on an existing manhole. Payment shall be based on the actual number installed complete in place. Payment shall be made at the contract unit price per each listed in the bid form. The unit price shall include

removal of the existing ring and cover, returning the existing ring and cover to PWC, any existing grade rings or masonry adjustment, any necessary excavation to remove and/or install the ring and cover or any manhole sections, preparation of the concrete surface as required, installation of the ring and cover, clean-up and proper removal and disposal of all unsuitable material off-site, and all labor, materials, tools, and equipment necessary to complete the work.

**D-18 RESTRAINED JOINT DUCTILE IRON SEWER MAIN IN CASING (OPEN CUT)**

Payment under this item shall include all necessary costs to install the specified casing and carrier pipe using open cut method. Payment shall be made at the applicable unit price per linear foot as indicated on the Bid Form. Payment shall include all costs for excavation, shoring, saw-cutting and removal of pavement, removal and disposal of excess unsuitable material off site, bedding material, steel casing, casing spacers, concrete grouting and closures, installation of the restrained joint ductile iron carrier pipe, backfill, compaction, and all labor, materials, equipment, and incidentals necessary to complete the work.

**D-19 FURNISH AND INSTALL TEMPORARY MANHOLE**

Payment under this item shall include all costs necessary to furnish and install any temporary manholes as specified on the plans. Payment shall be made at the applicable unit prices for each size and pay depth as indicated on the Bid Form. Payment shall include all costs for excavation, shoring, backfill, proper removal and disposal of unsuitable material off-site, linings, inverts, pipe slides, dewatering, compaction, cutting and removal of pavement, stone bedding, installation of the specified frame and cover, concrete collar, and all labor, materials, equipment and incidentals necessary to complete the work. Work shall also include all costs necessary to maintain sanitary sewer service during construction to include, but not limited to, maintenance of the manhole and laterals, pumping, hauling and proper disposal of waste for the duration of use of the temporary manhole.

**D-20 FURNISH AND INSTALL AERIAL 8-INCH CLASS 53 RJDIP CROSSING AND FLANGED DIP (INCLUDING PILES)**

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. Payment under this item shall include all necessary costs to furnish and install aerial pipe and all components of the aerial pipe support structures as indicated on the Contract Drawings and in accordance with PWC standards.

The unit price shall include all costs for excavation, shoring, removal and disposal of excess unsuitable material off site, installation of steel piers, placing concrete, installation of pipe cradle with pipe protection material saddle, installation of pipe strap, fittings, backfill, compaction, installation of pipe and all labor, materials, tools, equipment, and incidentals necessary to complete the work.



**DIVISION 1  
01300 – SUBMITTALS**

**GENERAL**

**1. THE REQUIREMENT**

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>Electronic Submittal</u>	<u>Type of Submittal</u>
1	Administrative Submittals
1	Construction schedule
1	Shop drawings
1	Product samples
1	Preconstruction Video
1	Certificates of compliance
1	Warranties

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.

**2. SUBMITTAL PROCEDURES**

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.

The Contractor shall revise and resubmit submittals as required, identifying all changes made since previous submittals. Resubmittals shall be noted as such.

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.

**3. ADMINISTRATIVE SUBMITTALS**

All administrative submittals shall be prepared and submitted in accordance with the Submittal Checklist provided in these Contract Documents. All Preconstruction Administrative submittals must be submitted and approved prior to the release of Contractor's first Application for Payment. Construction Administrative Submittals must be submitted and approved prior to the release of monthly pay applications. Post Construction Administrative Submittals must be submitted and approved prior to the release of the Contractor's Final Application for Payment.

#### **4. CONSTRUCTION SCHEDULE**

The construction schedule shall be prepared and submitted in accordance with Specification Section 01310. Six (6) copies of the schedule shall be submitted to the Project Engineer within 10 calendar days after the date of the Notice to Proceed.

The construction schedule shall be revised to reflect comments by the Fayetteville Public Works Commission and updated monthly, depicting progress to the last day of the month. Six (6) copies shall be submitted to the Project Engineer no later than the Monday prior to each Monthly Progress Meeting.

Changes to the schedule shall be accompanied by a letter of explanation with appropriate reference and revision date on the schedule.

#### **5. SHOP DRAWINGS**

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.

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.

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.

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.

Time delays caused by rejection of submittals are not cause for extra charges to the Fayetteville Public Works Commission or time extensions.

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.

## **6. 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.

Product data shall include materials of construction, dimensions, performance characteristics and capacities, etc.

Pipe manufacturer shall submit documentation for all pipe being supplied to this project indicating date of manufacture, type and place of storage, shipping methods, dates of delivery to site, and all required testing data. Pipe internal surface shall be smooth and free of all cuts, gouges, or scratches. Surface cuts or scratches greater than or equal to the maximum defect depth are not acceptable.

## **7. 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.

## **8. 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.

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.

## **9. 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.

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.

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.

## **10. 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:

- 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.
- Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.
- A list of installations (including contact information) where the proposed substitution is equal.
- 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.
- 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.
- Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.

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.

- Shop Drawing Distribution: The Contractor shall submit an electronic PDF copy 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 an electronic copy to the Contractor.

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.

## **11. PRODUCT SAMPLES**

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.

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.

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.

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.

Acceptable samples will establish the standards by which the completed Work will be judged.

## **12. PRECONSTRUCTION VIDEO**

The Contractor shall document pre-existing conditions on the project site in accordance with these Contract Documents. This shall be done prior to Work beginning in the area.

**The video shall be submitted to the Project Engineer before the first payment application can be released.**

## **13. RECORD DRAWINGS**

Upon completion of the Work, the Contractor shall provide two complete sets 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
- Change in manhole location
- Size, depth, and installed elevations of mains, laterals, force mains, manholes and lift stations.
- Location of valves, blow-offs, and other appurtenances
- Changes in location or extent of grout filled mains.
- Changes in force main bend locations, restrained joints or casings.

Completion of the Contractor's record drawings is a specific contract requirement, and final payment will not be made until these drawings and project manual (as required) have been submitted to and approved by the Project Engineer.

## **14. CERTIFICATES OF COMPLIANCE**

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.

## **15. WARRANTIES**

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.

When warranties are requested, a sample of the warranty to be provided shall be submitted with, and considered part of, the shop drawings.

The Contractor shall warrant to the Fayetteville Public Works Commission that all material and labor used in the construction are covered by his warrantee 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 warrantee 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. Special Provisions
- 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 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 (10) calendar days after the Notice to Proceed, the Contractor shall submit six (6) copies of their proposed construction schedule for the entire Contract duration to the Project Engineer.
- B. The Contractor shall submit hard copies and 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.
- C. 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.

- D. 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.

**DIVISION 1**  
**01400 - QUALITY CONTROL**

**1. 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 from a single manufacturer.

Compatibility of Options: If the Contractor cannot obtain all necessary products, materials, and/or equipment from a single manufacturer, the Contractor shall submit compatible products, materials, and/or equipment to the Fayetteville Public Works Commission for review and approval. Once the Fayetteville Public Works Commission has issued approval of the proposed products, materials, and/or equipment, the Contractor shall only utilize that manufacturer's products, materials, and/or equipment, unless otherwise approved in writing by the Fayetteville Public Works Commission.

**2. QUALITY CONTROL**

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

**3. TESTING SERVICES**

The Contractor shall cooperate with the Fayetteville Public Works Commission's Consultant performing required testing and provide equipment, access, or other means required at no additional expense to the Fayetteville Public Works Commission. The Contractor shall be responsible for coordinating testing with the PWC Project Coordinator. The Contractor shall be responsible for all costs incurred by the Fayetteville Public Works Commission's Consultant when scheduled testing cannot be performed.

The Fayetteville Public Works Commission shall employ and pay for the services of an independent laboratory for specified testing as outlined in these Contract Documents, with the following exceptions:

- If Laws and Regulations of any public body having jurisdiction specifically require any part of the Work to be tested, inspected, or approved by an employee or other representative of that public body, the Contractor shall be responsible for arranging and obtaining such inspections and/or approvals. The Contractor shall bear all costs associated with the required testing, inspections, and/or approvals, and shall furnish the Fayetteville Public Works Commission all required documentation that the required testing, inspection, and/or approvals have been obtained.
- If any part of the Work is found to be defective and not in compliance with the Contract Documents, the Contractor shall be responsible for all subsequent testing necessary to prove that the Work has been brought into compliance. Any necessary testing to ensure compliance shall be directed by the PWC Project Coordinator and/or PWC Project Engineer.

- When scheduled testing by the Fayetteville Public Works Commission's Consultant cannot be performed.
- Arranging and obtaining any required inspections, testing, or approvals required in connection with the Fayetteville Public Works Commission's acceptance of a material supplier, or equipment proposed to be incorporated into the Work, or materials, mix designs, etc. submitted for approval prior to purchase for incorporation into the Work. All inspections, tests, and approvals shall be performed by organizations acceptable to the Fayetteville Public Works Commission.

#### **4. PRODUCT EVALUATION**

Testing shall be accomplished as deemed necessary by the Fayetteville Public Works Commission to ensure that the products conform to the requirements of the 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 the Contract Documents, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform, accept or approve any of the Contractor's Work.

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 and his representatives, facilities including labor, and allow proper time for evaluation and testing materials, and workmanship. The Contractor must anticipate that possible delays may occur due to the necessity of materials being inspected and accepted for use. The Contractor shall furnish, at his own expense, all samples of materials required by the 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 PWC Project Engineer for the purpose of determining conformance with the Contract Documents if such tests, evaluation, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the 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 are ordered by the Fayetteville Public Works Commission to ascertain subsequent conformance with the Contract Documents.

#### **5. 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 the Contract Documents. Compliance is a duty

of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Fayetteville Public Works Commission.

## **6. SAMPLING AND TESTING**

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

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 the 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 the Contract Documents shall be reasonable cause for the Fayetteville Public Works Commission to require the removal or correction and reconstruction of any such work in accordance with the Contract Documents. In addition to any other evaluation, observation or quality assurance provisions that may be specified, the 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 the Contract Documents.

## **7. 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.

## **8. 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 the Contract Documents, regardless of whether the defects in such articles or materials are detected at the point of manufacture or after completion of the Work. If the Fayetteville Public Works Commission, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to the Contract Documents, such materials, no matter in what stage or condition of manufacture, delivery, or erection, may be subsequently rejected by the 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 by quality construction to ensure proper sealing so that groundwater and/or rainwater will not leak into any 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.

### **9. 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.

### **10. 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 the Contract. Except as otherwise provided in the Contract Documents, the performance and cost of the required tests will be the responsibility of the Fayetteville Public Works Commission. 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 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.

**DIVISION 1  
01700 - PROJECT CLOSEOUT**

**1. FINAL CLEANUP**

The Contractor shall promptly remove from the vicinity of the completed Work, all rubbish, unused materials, plugs, 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 remove all plugs installed to protect the existing sanitary sewer main from manholes and/or new sanitary sewer mains.

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.

**2. 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.

**3. 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:

- 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.

**4. PUNCH LISTS**

Final cleaning shall be scheduled upon completion of the project.

The Fayetteville Public Works Commission will make its 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 final 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.

**5. 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.

**6. 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 \*\*\*

## **SECTION D – TECHNICAL SPECIFICATIONS**

**DIVISION II**  
**02000 – SPECIAL PROVISIONS**

1.05 Summary

- A. The project consists of 6,360 linear feet of 8-inch gravity sanitary sewer, 610 linear feet of 8-inch restrained joint ductile iron aerial crossings, 41 sanitary sewer laterals and 34 manholes, approximately 1,033 linear feet of 8-inch sanitary sewer in 24-inch encasement by bore and jack, 31 linear feet of 8-inch sanitary sewer in 24-inch encasement by open cut, 1,700 linear feet of 12-inch water mains and 55 linear feet of 12-inch water main. The project includes bypass pumping, stream crossings, stream bank stabilization, trenchless construction, aerial crossings, asphalt pavement patch, sod installation and restoration, as well as testing and acceptance of the gravity sanitary sewer and water mains.
- B. All work shall be done in accordance with the terms and conditions outlined herein, Fayetteville Public Works Commission (PWC) “Manual for the Design and Construction of Water and Wastewater System Extensions” (most recent edition), in accordance with the NCDOT Standard Specifications for Roads and Structures (most recent edition), and subject to final approval and acceptance by Fayetteville Public Works Commission.

1.06 Fayetteville Public Works Commission Responsibilities

- A. Fayetteville Public Works Commission is the owner of the water and sanitary sewer utilities within the public rights-of-way within the project area. Fayetteville Public Works Commission will have a Project Coordinator assigned to this project, to observe construction of the water and sanitary sewer utilities. All work related to the water and sanitary sewer utilities shall be coordinated through Fayetteville Public Works Commission. The Contractor shall notify Fayetteville Public Works Commission a minimum of two (2) business days in advance of beginning any construction on the water and sanitary sewer utilities.
- B. Should there be any changes to the design of the water and sanitary sewer utilities, such changes shall be approved by Fayetteville Public Works Commission, in writing, before the Contractor proceeding with the proposed revision. Fayetteville Public Works Commission has sole authority regarding decisions impacting the water and sanitary sewer utilities within the project area.
- C. Fayetteville Public Works Commission shall review and approve all requests for payment related to the construction of the water and sanitary sewer utilities. The Contractor shall submit all requests for payment in accordance with these Contract Documents.

1.07 Resolving Discrepancies

- A. Except as may be otherwise specifically stated in the Contract Documents, the following order of precedence shall be adhered to for resolving any conflict, error,

ambiguity, or discrepancy between the provisions of the Contract Documents as they relate to PWC water and/or sanitary sewer utilities:

1. Any addendum issued prior to the opening of Bids
2. Section 02000 – Special Provisions
3. Section 01025 – Measurement and Payment
4. Approved Contract Drawings
5. PWC Standard Details
6. PWC Technical Specifications
7. General Conditions of the Contract Documents

#### 1.08 Customer Service

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

#### 1.09 Customer Notification

- A. Whenever the property owner's use of the water and/or sanitary sewer utilities must be interrupted by the Work, the Contractor shall notify the residents well in advance of the 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. This notice shall be a minimum 48 hours prior to service interruption. The Contractor shall make every effort to minimize inconvenience to the public and property owners.
- B. Service interruptions to residents shall be limited to no more than eight (8) hours at any given time.

- C. The notifications shall describe the work to be undertaken and 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 residents.

#### 1.010 Guarantee

- A. All water and/or sanitary sewer work completed under these Contract Documents shall be guaranteed by the Contractor for a period of one (1) year from the date of final acceptance. During that period, all serious defects discovered in the water and/or sanitary sewer 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. Fayetteville Public Works Commission may conduct an independent inspection, at their sole expense, of the completed water and/or sanitary sewer work prior to the completion of the one (1) year guarantee period.
- B. Should Fayetteville Public Works Commission's inspection determine that the water and/or sanitary sewer work is not in accordance with these Contract Documents; the Contractor shall mobilize and make all necessary repairs at no expense to Fayetteville Public Works Commission. The Contractor will receive written notification from Fayetteville Public Works Commission, and be allowed the chance to review any available inspection pictures or other documentation. The Contractor shall respond to Fayetteville Public Works Commission with a plan of action within 30 calendar days of receiving notification. The Contractor shall mobilize and begin to complete the repairs/replacement within 60 calendar days of receiving notification. The Contractor shall:
  - 1. Repair such defective land or areas.
  - 2. Correct such defective Work, or if the defective Work has been rejected by the PWC Project Engineer, remove it from the project and replace it with Work that is not defective.
  - 3. Satisfactorily correct, repair, remove, or replace any damage to other Work, damage to the work of others, and damage to other land or areas.
- C. If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Fayetteville Public Works Commission reserves the right to contract with another party to complete the warranty work, at the sole expense of the Contractor. All claims, costs, losses, and damages (including but not limited to all fees and charges or design professionals, attorneys, and other professionals and all court, arbitration or other dispute resolution costs arising out of or relating to such correction or repair or such removal and replacement of work of others) shall be paid by the Contractor.
- D. The warranty period stated is specifically for the water and/or sanitary sewer work installed by the Contractor. Any collateral damage discovered during the warranty

period will be investigated and the Contractor will be required to respond if the damage is determined to have occurred during the construction process.

#### 1.011 Discovery of Defects

- A. The Contractor warrants and guarantees to Fayetteville Public Works Commission, that all water and/or sanitary sewer work will be in accordance with these Contract Documents, will not be defective, and that all materials and equipment used for the work are appropriate for the Project. Fayetteville Public Works Commission shall provide prompt notice of all defects to Contractor upon discovery. All defective water and/or sanitary sewer work, whether or not in place, may be rejected, corrected, or accepted, at Fayetteville Public Works Commission's sole discretion.
- B. Fayetteville Public Works Commission reserves the right, should an error be discovered in the estimate or conclusive proof of defective work or materials used by or on the part of the Contractor be discovered either before or after the final payment has been made, to claim and remove by process of law such sum or sums as may be sufficient to correct the error or make good the defects in the work and materials.

#### 1.012 Cleanliness During Construction

- A. The Contractor shall perform a daily clean-up of all dirt, debris, scrap materials and other disposable items resulting from the Contractor's operations, whether on-site or off-site. The Contractor shall remove all construction equipment, barricades, tools, surplus materials, etc. no longer required at the site. No open accumulation of refuse, surplus or scrap materials will be permitted. 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 construction. No separate payment shall be made for maintaining a clean project site.
- B. The Contractor shall control the dust in all areas of the project limits for the entire duration of construction. Dust control may be accomplished by use of either water or dust control materials, or as directed by the PWC Project Engineer. No separate payment shall be made for dust control.

#### 1.013 Working Times

- A. The Contractor shall limit their operations to Monday through Friday, between the times of 7:00 am and 5:00 pm, unless otherwise approved by Fayetteville Public Works Commission (NCDOT Encroachment may limit work to 9:00 am to 4:00 pm). No work is permitted on legal Holidays (to include holiday weekends). No work, unless otherwise required due to an emergency and authorized by Fayetteville Public Works Commission, shall be performed on weekends or after hours without prior written approval from Fayetteville Public Works Commission. Requests to work other than regular working hours must be submitted in writing to Fayetteville Public Works

Commission a minimum of two (2) full business days in advance in order to arrange for appropriate personnel to be at the site of the Work. Requests shall only be approved if Fayetteville Public Works Commission determines that the work is necessary in order to meet the contract completion date. The written request shall include a proposed schedule for the work to be completed. During the course of construction, it may be necessary to complete portions of the Work outside of the normal working hours, to accommodate the utility owner's operations, traffic, and/or public convenience. The Contractor, Fayetteville Public Works Commission, and the utility owner will determine an acceptable schedule required for Work during such hours. The costs for such Work shall be considered incidental to the Project and no additional payment will be made.

- B. Inspector Overtime shall be charged during those times when the Contractor is authorized to work outside of the normal working hours outlined above. The overtime will be charged at \$125.00 per hour. The Project Coordinator shall be present at all times when the Contractor is approved to work outside of normal hours. The overtime charge will be deducted from the Contractor's pay application. Inspector overtime may be waived for circumstances beyond the Contractor's control as deemed by the Project Engineer or Project Coordinator.
- C. Should the Contractor be granted permission to work outside of the normal working day or time, the Contractor shall adhere to the time restrictions agreed to in the Project Engineer's approval of the request. The Contractor will be assessed a penalty of \$250 per 30-minute interval for any portion thereof, should the Contractor fail to leave the site at the agreed upon time. Inspector overtime will be charged during the approved hours, as outlined above. The penalty may be waived for circumstances beyond the Contractor's control, as deemed by the Owner.

Note: The Contractor, may, without penalty, complete servicing of equipment in the approved staging yard after normal work hours.

- D. Legal holidays observed by Fayetteville Public Works Commission include New Year's Day, Martin Luther King's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving (2 days), and Christmas (2 days).

#### 1.014 Construction Staking

- A. All utility construction shall be staked in the field. Cut sheets shall be provided to Fayetteville Public Works Commission and the Contractor. No construction will be allowed to proceed unless the installation is staked and cut sheets are on site. The Contractor shall maintain cut sheets on the project site at all times, and make them available for inspection by PWC staff.

#### 1.015 Equipment

- A. The Contractor shall be equipped with equipment perfectly adaptable for the type of construction required; all such equipment shall be of sufficient capacity to handle the work in an expeditious and safe manner. 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.

- B. 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.

#### 1.016 Warranty Against License Agreements

- A. The Contractor shall warrant to Fayetteville Public Works Commission that the equipment used on this Contract, where covered by patents or license agreements, is furnished in accordance with such agreements and that the prices included herein cover all applicable royalties and fees in accordance with such license agreements. The Contractor shall defend, indemnify, and hold Fayetteville Public Works Commission harmless from and against any and all costs, loss, damage, or expense arising out of or in any way connected with any claim of infringement of patent, trademark, or violation of license agreement.

#### 1.017 Agreements with Property Owners

- A. Any and all agreements between the Contractor and individual property owners for work, services, rent of staging areas, etc. located outside of any easements or public rights-of way shall not obligate the City of Fayetteville, Fayetteville Public Works Commission, or the Design Engineer 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, Fayetteville Public Works Commission, and Design Engineer are not liable for any agreements between the Property Owner and the Contractor, and that the Contractor shall hold harmless and defend the City, Fayetteville Public Works Commission, and the Design Engineer from all claims, damages, etc.
- B. Additionally, the Contractor shall have the responsibility to secure any and all agreements with property owners for any actions taken by their Subcontractors.
- C. Prior to release of final payment, the Contractor shall obtain written releases from the property owners for satisfaction, completion, and restoration. Copies of those written releases shall be submitted to Fayetteville Public Works Commission with the final pay application.
- D. The Contractor bears complete responsibility for any damage to private properties outside of the PWC easements and/or rights-of-way.

#### 1.018 Submittals

- A. The Contractor shall provide submittal information regarding the water as outlined below. 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.

- B. The Contractor shall submit to Fayetteville Public Works Commission one (1) set electronically (as an Adobe pdf) of all required submittal data for review and approval. The Contractor shall furnish, prior to use of the materials, satisfactory written certification of his compliance with the manufacturer's standards for all materials, conformance with the methods of the manufacturer, and accordance with all standards specified and referenced within these specifications. If requested by Fayetteville Public Works Commission, the manufacturer of materials, equipment, or product shall submit evidence of having consistently produced materials of satisfactory quality and performance for a period of at least two (2) years.
- C. The Contractor shall provide submittals on the following:
  - 1. Contractor's safety plan, including confined space program
  - 2. Contractor personnel emergency contact information
  - 3. Labor and equipment rates
  - 4. Sample property owner agreement (if applicable)
  - 5. Executed property owner agreement (if applicable)
  - 6. Pre-construction video and pictures
  - 7. Project Sign (if applicable)
  - 8. Proposed schedule
  - 9. Ductile iron pipe materials and fittings
  - 10. Staging Yard
  - 11. Restrained joint ductile iron pipe and fittings
- D. 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.
- E. Fayetteville Public Works Commission shall review and approve, disapprove, or approve with comment the submittal within 10 business days of receipt. All notifications on the submittals will be provided to the Contractor in writing. Fayetteville Public Works Commission shall return one (1) electronic (as an Adobe pdf) copy of the submittals to the Contractor.
- F. Fayetteville Public Works Commission's review of the submittals will cover only general conformity to these Contract Documents, external connections, and dimensions which affect the layout. Fayetteville Public Works Commission's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, device, or item shown. Fayetteville Public Works Commission's review shall not relieve the Contractor of the Contractor's sole responsibility for errors, omissions, or deviations in the drawings and data, nor of the Contractor's sole responsibility for compliance with these Contract Documents.
- G. Any need for more than one (1) re-submission, or any other delay in obtaining Fayetteville Public Works Commission's review of submittals, will not entitle the

Contractor to an extension of the contract duration, unless the delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of Fayetteville Public Works Commission to review any submittal within the submittal review period specified herein and to return the submittal to the Contractor.

1.019 Limits of Construction

- A. The Contractor shall confine their construction operations to the existing permanent easement or the existing street rights-of-way. 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 or better than existing.

1.020 Traffic Control

- A. All traffic control measures shall be in accordance with the Manual of Uniform Traffic Control Devices, NCDOT and/or COF approved traffic control plans. It shall be the Contractor's responsibility that all requirements set forth by the appropriate agency are adhered to through the duration of the project.

1.021 Erosion Control

- A. The provisions of Chapter 139, North Carolina Statutes as amended, Soil Erosion and Sedimentation Control shall be applicable to this project. The minimum requirements for erosion and sediment control are shown on the drawings, based on the anticipated construction methods. The Contractor shall adjust the measures to complement their operations and prevent the transmittal of silt. All necessary erosion control measures shall remain serviceable until the site is restored and stabilized. Upon such time, the Contractor shall remove all temporary measures.
- B. 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 the Public Works Commission. The Contractor shall immediately notify the Public Works Commission of any fine, penalty, or notice of non-compliance by NCDENR. The Contractor may be required to modify or supplement the measures at no additional cost to the Public Works Commission.
- C. 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.
- D. Permanent and temporary erosion control measures proposed by the Contractor for staging areas, haul roads, etc. shall be at the Contractor's expense and shall not constitute additional compensation.
- E. 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 NCDENR approved plan shall be furnished to the Owner. Work cannot begin until the plan is approved. Permanent and temporary erosion control measures proposed by the Contractor for staging areas, haul roads, etc. shall be at the Contractor's expense and shall not constitute additional compensation.

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

#### 1.022 Encroachment

- A. The Public Works Commission has obtained NCDOT encroachments for this project. A copy of the approved encroachments can be found in the appendix of these Contract Documents. The Contractor shall be responsible for complying with the terms and conditions of the approved encroachments.
- B. Prior to any construction within NCDOT rights-of-way, the Contractor shall notify the District Engineer's Office in accordance with the approved encroachment. A copy of the approved encroachment agreement/permit shall be kept on the job site at all times and made readily available if requested. The NCDOT reserves the right to stop any work for noncompliance without claim for extra compensation.
- C. All costs to comply with the terms of the approved NCDOT encroachment shall be the responsibility of the Contractor.

#### 1.023 Sanitary Sewer and Water Laterals

- A. During construction it may be necessary to change the proposed lateral location(s). The Contractor shall coordinate with the Project Coordinator to establish the new location and invert elevation to install the lateral. If the location of the lateral changes prior to installation, the Contractor shall install the lateral at no additional cost to the Owner. If the location changes after installation, the Contractor may submit a request for additional compensation in accordance with these Contract Documents. The existing lateral and main connection shall be abandoned in accordance with PWC requirements.

#### 1.024 Fire Department Coordination

- A. Existing fire hydrants shall be accessible to the Fire Department at all times. If the fire hydrants are in need of replacement, relocation, or connected to a new water main, Fayetteville Public Works Commission, PWC Project Coordinator, and the appropriate Fire Department shall be notified and coordinated with prior to commencing work. Fire hydrants shall not be removed from service without prior approval of Fayetteville Public Works Commission.

#### 1.025 Emergency Response

- A. The Contractor shall maintain a construction crew capable of performing emergency maintenance work 24 hours a day, seven (7) days a week, including all holidays. The Contractor shall furnish 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 at the pre-construction conference. The Contractor's designated emergency personnel shall be expected to respond and perform emergency maintenance work immediately, in less than two (2) hours, or the work will be performed by others and all associated costs shall be deducted from the Contractor's payment.

- B. Once on-site, the Contractor shall notify the PWC Dispatcher (910-678-7400) of the problem, the anticipated response time, and the estimated time required to complete the repair work. It is the Contractor's responsibility to maintain the appropriate repair materials on-site in order to provide an immediate response to the emergency.

#### 1.026 Construction around Utility Poles and Guy Wires

- A. 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 Fayetteville Public Works Commission.

#### 1.027 Protection of Existing Utilities

- A. The Contractor shall take every precaution to guard against any or all damage to existing structures, pipe lines, and/or equipment of Fayetteville Public Works Commission. Any damage to existing structures and/or pipe lines shall be the direct responsibility of the Contractor. Damage shall be replaced and/or repaired by the Contractor as directed by the PWC Project Coordinator, or the value of such deducted from any monies due the Contractor under this Contract.
- B. The PWC Project Coordinator shall supervise the Contractor's operation of all valves, gates, and other equipment. Except in case of emergency, the Contractor shall notify the PWC Project Coordinator 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.
- C. The Contractor shall in no case permit the introduction of water from the existing system into any new main without prior approval of the PWC Project Coordinator. The Contractor shall notify the PWC Project Coordinator a minimum of two (2) business days in advance of commencing the connection to an existing main.
- D. The Contractor shall notify the PWC Project Coordinator a minimum of 48 hours in advance to coordinate any proposed service interruption. Note: the scheduling and coordination of a water outage within the PWC system shall be done in accordance with Item 40 of these Special Provisions. If an unscheduled service interruption occurs, the Contractor shall immediately notify the PWC Project Coordinator. The Contractor shall immediately commence repairs as directed by the PWC Project Coordinator.

- E. In any event debris or other items from the Contractor's operation enters the sanitary sewer system, the Contractor shall immediately contact the PWC Project Coordinator. The Contractor shall then immediately 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.
- F. During the course of construction, some work will need to be performed during non-normal working hours to accommodate Fayetteville Public Works Commission's operations, traffic, and/or public convenience. The Contractor and the PWC Project Engineer will determine an acceptable schedule required for work during such hours. The cost of this work shall be included in the base bid.

#### 1.028 Existing Utilities

- A. The Contractor shall locate existing underground utilities in the areas of work. If utilities are to remain in place, the Contractor shall provide protection during construction operations. Additionally, the Contractor will coordinate with utility companies when working in close proximity to their line/services.
- B. Should uncharted or incorrectly charted piping or other utilities be encountered during excavations, the Contractor shall immediately consult the PWC Project Engineer for directions as how to proceed. The Contractor shall fully cooperate with Owner and utility companies in keeping respective services and facilities in operation.
- C. The Contractor shall adhere to the provisions of the 1985 Underground Damage Prevention Act, North Carolina General Statutes. The Contractor shall contact the NC One Call System for locates prior to beginning work in a particular area. The Contractor shall include the cost of any coordination and cooperation for utilities in his bid.
- D. Actual horizontal and vertical locations have not been verified. As part of the Contract work, the Contractor is required to excavate each utility which may conflict with construction in advance to verify locations. The utilities shall be excavated a minimum of 14 business days in advance of actual installation of new utilities to allow the PWC Project Engineer an opportunity to adjust grades, alignments, etc., to avoid a conflict. Separate payment will not be made to physically verify the utility locations.
- E. 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 PWC Project Engineer at the Contractor's expense. The Contractor's failure to advance plan (minimum 14 business 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.
- F. When the Contractor's controlling operations are halted due to the failure of a utility owner to relocate or adjust a utility after being properly notified by the Contractor, the contract period may be extended by the amount of time the Contractor's controlling

operations have been delayed while awaiting the relocation or adjustment. Contractor shall proceed with work in areas not affected by the relocation or adjustment delay.

- G. Fayetteville Public Works Commission 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.

#### 1.029 Crossing Existing or Proposed Utilities

- A. 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:
  - i. Crossing over a conductor, maintain a minimum of 12 inches of undisturbed soil encasing the conductor.
  - ii. Crossing under a conductor shall be accomplished by boring, maintaining 12 inches of undisturbed soil encasing the conductor.

- B. No separate payment shall be made for this work.

#### 1.030 Replacement of Fencing

- A. The Contractor is to replace any fencing disturbed as part of their operations for the work described within these Contract Documents. 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 Fayetteville Public Works Commission. Fences shall be removed and replaced, using new materials.

#### 1.031 Preconstruction Video

- A. The Contractor shall complete a pre-construction video inspection of the project area, to document pre-existing conditions. The video shall be in a standard digital video file format (mp4 or avi) and on a standard portable digital media (USB Flash Drive or USB Hard Disk Drive). The intent of this video is to document the existing project conditions: the driveways; the condition of the curb and gutter, if any; the condition of the road, the condition of the mailboxes, retaining walls, fences and gates, landscaping, any other resident installed improvements; and the condition of the sod. The Contractor shall also include any easement areas, especially those passing through yards, driveways, etc. The video must identify the house number and the street name in the audio track and visually. 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. The pre- construction video will be utilized by Fayetteville Public Works Commission in the resolution of complaints. Therefore, it is in the Contractor's best interest to ensure that the pre-construction video is comprehensive and covers all areas to be impacted by the Work.

#### 1.032 Monthly Progress Meetings

- A. The Contractor and 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.
- B. The purpose of the meeting is to discuss various project related items, including, but not limited to: safety concerns, overall project status and schedule, the Contractor's schedule for the upcoming month, issues that the Contractor and/or PWC Project Engineer need to address, and any proposed or potential change orders.
- C. The cost for the Contractor's representative to attend the monthly meetings shall be included in the unit prices bid.

#### 1.033 Project Schedule

- A. The Contractor shall provide Fayetteville Public Works Commission a project schedule, in accordance with the requirements of this paragraph. Each week, the Contractor shall provide Fayetteville Public Works Commission 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 Fayetteville Public Works Commission of any deviations to their schedule. Failure to notify Fayetteville Public Works Commission of any deviations may result in payment being withheld.

#### 1.034 Permits

- A. This project is required to have water permit, which will be issued by Fayetteville Public Works Commission. The Contractor shall have a set of the approved plans on the jobsite at all times. The Contractor shall make the approved plans available for inspection by PWC staff.
- B. This project is required to have a permit issued in compliance with Section 404 (Clean Water Act, 33 USC 1344) in accordance with NWP 12 and Section 401 Water Quality Certification. The permit and conditions are included in the appendix.
- C. This project may require 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 \$25,000.00 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 Fayetteville Public Works Commission for forwarding to the City of Fayetteville.

1.035 Bulk Water Usage

- A. Fayetteville Public Works Commission will allow the Contractor to use water from its existing water system. The Contractor shall utilize proper backflow prevention devices when obtaining water from Fayetteville Public Works Commission's system. The Contractor shall contact PWC's Environmental System Protection Department at 910-223-4699 to determine the required backflow prevention devices, and to obtain a bulk water use permit. The Contractor shall be responsible for the cost of the bulk water permit fee. The bulk water permit fee is an annual fee, and shall be paid by the Contractor each year that this Contract is in effect. The Contractor shall provide documentation on the amount of water used for their operations, and provide a monthly statement to Fayetteville Public Works Commission.

1.036 Replacement of Water Services

- A. The Contractor shall replace the existing water services that are damaged as a result of their operations, utilizing copper tubing. Should the Contractor's operations damage a marked service, the Contractor shall replace that service at no cost to Fayetteville Public Works Commission. Installation of the services shall be in accordance with PWC standard detail W.24. Damaged water services shall be replaced from the meter to the existing main. The Contractor shall properly abandon the existing tap, and install a new tap, utilizing a new tapping saddle and corporation.
- B. All new lock valves and fittings shall be installed in the new meter boxes, in accordance with PWC standard detail W.24. The Contractor shall install a new tailpiece, as required in the standard detail. 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.
- C. Additionally, the existing meter boxes shall be replaced as part of the renewal of the water services. The meter boxes shall be in accordance with PWC standard detail W.4. A composite, H-20 rated meter box shall be used if the meter is to be located in asphalt or concrete, in accordance with PWC standard detail W.4B. The Contractor shall be responsible for furnishing and installing the meter boxes. All work shall be reviewed and approved by the PWC Project Coordinator.
- D. 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. Payment for replacement of water services directed by the PWC Project Engineer shall be paid for in accordance with the Measurement and Payment section of the Contract Documents.
- E. Water services shall be abandoned by cutting the service at the main, plugging the corporation, and turning the corporation off. At the meter box, the abandoned service is to be cut or crimped, and buried a minimum of three (3) feet below grade.

#### 1.037 Replacement of Castings

- A. All existing valve boxes and manhole ring and covers within the area(s) to be re-paved shall be replaced with new castings provided by Fayetteville Public Works Commission at no cost to the Contractor. The Contractor shall be responsible for exchanging castings at Fayetteville Public Works Commission facility (1097 Public Works Drive). All castings shall be installed to the finished grade, and shall be in accordance with Fayetteville Public Works Commission standards. The Contractor shall coordinate with the PWC Project Coordinator regarding the exchange of castings. Any debris that falls into a manhole and/or valve box shall be removed immediately.

#### 1.038 Testing

- A. The Contractor shall coordinate and fully cooperate with the PWC Project Coordinator when scheduling testing. The Contractor shall provide a minimum of two (2) business days notice when scheduling testing with the PWC Project Coordinator. All testing shall be in accordance with PWC technical specifications.
- B. All manholes (except doghouse manholes), sewer mains, and sewer laterals shall be tested to the satisfaction of Fayetteville Public Works Commission, prior to being placed into service.
- C. 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 Fayetteville Public Works Commission. If the same line segment and/or manhole fails the required testing more than two (2) times, the Contractor shall be charged a fee of \$100.00 per test, beginning with the third attempt, until a passing test achieved.

#### 1.039 Compaction Requirements

- A. These Contract Documents contain compaction requirements in Specification Section 02222. The testing requirements listed below specifically pertain to annexation projects. This procedure shall be used at all times.
- B. Tests for density of compaction are made at the sole direction of the Project Engineer or the Project Coordinator. All deficiencies shall be corrected by the Contractor without additional cost to the Owner. The following outlines the requirements for compaction testing:

##### Sanitary Sewer Main

- A. For every section of sanitary sewer main line less than 250 feet between manholes, one (1) test series each shall be completed at the 95% and 98% compaction zones (for a total of two tests). For sections of sanitary sewer greater than 250 feet between manholes, two (2) test series shall be completed at the 95% and 98% compaction zones (for a total of four tests). Additionally, for the sub-grade, one (1) test shall be taken on each street or every 250 feet (whichever is shorter).
- B. If a compaction test fails, the Contractor, at his option and cost, can perform two (2) additional tests fifteen (15) feet on either side of the failing test. If those two tests pass, the Contractor is required to re-excavate and re-compact that section between the passing tests. If one (1) of the tests fails, the Contractor shall re-excavate and re-

compact from the passing test to the next manhole. If both tests fail, the Project Coordinator has the sole option to require another compaction test deeper within the zone (i.e., 95% compaction). This additional test shall be done at the Owner's cost. Should this additional test fail, the Contractor shall re-excavate and re-compact the entire zone from manhole to manhole. Should the Project Coordinator elect not to complete an additional compaction test at a deeper depth, the Contractor shall re-excavate and re-compact the entire section at the test elevation, from manhole to manhole. Any section re-excavated and re-compacted shall be re-tested in accordance with these specifications. Each retest (bracket or otherwise) will be at no cost to the Owner. Contractor will only receive payment for mainline pipe if it has passed compaction testing requirements.

- C. For every lateral installed on the project the Project Coordinator shall request, at a minimum, one (1) out of every three (3) laterals be tested. It is the Project Coordinator's sole option in determining the location and number of laterals to be tested. If a compaction test fails, the Contractor must re-excavate and re-compact the failing location and the other two (2) laterals in the group. Each retest will be at no cost to the Owner. The Contractor shall only receive payment for laterals that pass compaction testing requirements. Additionally, for the sub-grade, tests may be taken at the discretion of the Project Coordinator.

#### Water Main

- A. For testing of water main trench backfill, one (1) test series shall be completed at the 95% and 98% compaction zones (for a total of two tests) per street/easement area or every 250 feet, whichever is shorter. To test the sub-grade, one (1) test shall be taken on each street/easement area or every 250 feet whichever is shorter.
- B. If a compaction test fails, the Contractor, at his option and cost, can perform two (2) additional tests fifteen (15) feet on either side of the failing test. If those two tests pass, the Contractor shall re-excavate and re-compact that section between the passing tests. If one (1) of the tests fails, the Contractor is required re-excavate and re-compact from the passing test to 125 feet either side of the original failing test. If both tests fail, the Contractor shall re-excavate and re-compact 125 feet of either side from the initial test, for a total of 250 feet. Any section re-excavated and re-compacted shall be re-tested in accordance with these specifications. Each retest (bracket or otherwise) will at no cost to the Owner. Contractor will only receive payment for mainline pipe if it has passed compaction testing requirements.
- C. For every lateral installed on the project the Project Coordinator shall request, at a minimum, one (1) out of every three (3) laterals be tested. Additionally, for the sub-grade, tests may be taken at the discretion of the Project Coordinator.
- D. It is the Project Coordinator's sole option in determining the location and number of laterals to be tested. If a compaction test fails, the Contractor must re-excavate and re-compact the failing location and the other two (2) laterals in the group. Each retest will be at no cost to the Owner. The Contractor shall only receive payment for laterals that pass compaction testing requirements.

#### Storm Drainage

- A. For every section of storm drainage less than 250 feet between structures, one (1) test series each shall be completed at the 95% and 98% compaction zones (for a total of two tests). For sections of storm drainage line greater than 250 feet between structures, two (2) test series shall be completed at the 95% and 98% compaction zones (for a total of four tests). Additionally, for the sub-grade, one (1) test shall be taken on each street or every 250 feet (whichever is shorter).
- B. If a compaction test fails, the Contractor, at his option and cost, can perform two (2) additional tests fifteen (15) feet on either side of the failing test. If those two tests pass, the Contractor is required to re-excavate and re-compact that section between the passing tests. If one (1) of the tests fails, the Contractor shall re-excavate and re-compact from the passing test to the next structure. If both tests fail, the Project Coordinator has the sole option to require another compaction test deeper within the zone (i.e., 95% compaction). This additional test shall be done at the Owner's cost. Should this additional test fail, the Contractor shall re-excavate and re-compact the entire zone from structure to structure. Should the Project Coordinator elect not to complete an additional compaction test at a deeper depth, the Contractor shall re-excavate and re-compact the entire section at the test elevation, from structure to structure. Any section re-excavated and re-compact shall be re-tested in accordance with these specifications. Each retest (bracket or otherwise) will be at no cost to the Owner. Contractor will only receive payment for mainline pipe if it has passed compaction testing requirements.

#### 1.040 Ductile Iron Sewer Pipe

- A. All ductile iron pipe, to include laterals and fittings, installed for sanitary sewer service shall have an interior coating of Protecto401 or approved equal. All ductile iron pipe and fittings shall be in accordance with PWC standards. All couplings (sleeves) shall be long pattern mechanical joint (minimum 12-inches in length). Sleeves shall be utilized as specified on the Contract Drawings and as directed by Fayetteville Public Works Commission.

#### 1.041 Waste Disposal

- A. The Contractor shall properly dispose of all debris resulting from their operations, in accordance with applicable Federal, State, and local laws, regulations, and rules.

#### 1.042 Contractor's Responsibility for Work

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

#### 1.043 Responsibility for Material

- A. All pipe, fittings, manholes, and other materials shall be inspected upon arrival at the job site by a competent superintendent before unloading to insure that the quality of the materials conform to the specifications. All materials shall be subject to inspection by Fayetteville Public Works Commission. Materials found to be defective shall be clearly marked to assure the necessary repairs are made, if approved by the PWC Project Coordinator. If approved, the material is incorporated in the work or replaced with sound material without additional expense to Fayetteville Public Works Commission.

#### 1.044 Water Outages

- A. The Contractor shall schedule a coordination meeting with Fayetteville Public Works Commission a minimum of three (3) business days prior to any planned water outage. The coordination meeting shall be conducted 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.
- B. The purpose of this coordination meeting is to ensure that the Contractor has a good understanding of the requirements related to the pending outage, verify that there are no utility conflicts that will prevent the work from being completed, all equipment is in good working order, all equipment is functional, all materials are on site, all necessary tools are on site, discuss any necessary contingency plans, and any other items necessary to ensure that Fayetteville Public Works Commission has confidence that the work can be accomplished within the given time period. Should, for any reason, Fayetteville Public Works Commission 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. Fayetteville Public Works Commission 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, Fayetteville Public Works Commission reserves the right to assess liquidated damages, as outlined in these Contract Documents.
- C. Once the water outage notifications have been issued, a follow-up coordination meeting with Fayetteville Public Works Commission 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 Fayetteville Public Works Commission 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, Fayetteville Public Works Commission reserves the right to assess liquidated damages, as outlined in these Contract Documents.

- D. 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, 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 deemed by Fayetteville Public Works Commission. Fayetteville Public Works Commission reserves the right to cancel or postpone the outage at any given time, for any given reason.

#### 1.045 Confined Space

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

#### 1.046 Excavation

- A. The Contractor shall be responsible for utilizing all measures necessary to comply with the applicable OSHA regulations.
- B. Before excavating, the Contractor shall contact the NC One-Call Center for the location of existing utilities within the project area. Costs of utility repairs, temporary service and other costs resulting from damage to or interruption of utilities, resulting from operations under this contract, shall be done by Contractor at no additional cost to Fayetteville Public Works Commission.
- C. 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.

#### 1.047 Site Restoration

- A. Once construction is completed, the Contractor shall be responsible for restoring the site to as good as, or better than existing conditions. All exposed areas not otherwise improved with asphalt, concrete, etc. are to be replaced with sod to insure against erosion, in accordance with the Soil Erosion and Sedimentation Control requirements.
- B. For those areas outside the project limits, the Contractor shall be responsible for installing asphalt, concrete, etc. on non-turf areas and sod in all disturbed areas, unless otherwise noted on the plans, and for the full replacement of any driveways, sidewalks, pavements, etc. disturbed as part of their operations.

#### 1.048 Review of Contractor Pay Request

- A. Prior to the Contractor submitting an application for payment, the Contractor and Fayetteville Public Works Commission shall review and agree on all items and quantities that the Contractor is requesting payment for. Each pay request shall contain a certificate documenting any sales tax paid by the Contractor for that billing period. A certified form is required even if no sales tax was paid for that pay request period. The Contractor shall include all copies of invoices supporting the sales tax claimed in the certified sales tax form.
- B. Final payment will not be made until:
  - 1. all testing requirements have been satisfactorily met,
  - 2. Fayetteville Public Works Commission has completed a final inspection of the work,
  - 3. all deficiencies noted in the final inspection have been satisfactorily addressed,
  - 4. all necessary site restoration has been completed, and
  - 5. all required documentation (reports, release of liens, Property Owner release, etc.) has been submitted.

#### 1.049 Final Inspection/Acceptance of Work

- A. When the PWC Project Coordinator deems the project completed and ready for final inspection, the PWC Project Coordinator shall notify the PWC Project Engineer. During the final inspection any items documented shall be compiled in a final punch list and provided to the Contractor within five (5) business days. The Contractor shall be required to complete each item in the final inspection punch list within 30 calendar days of receipt. Failure to complete the punch list in that time may result in liquidated damages being assessed. The project will not be considered complete until all punch list items are completed and accepted, unless otherwise determined by the PWC Project Engineer. All punch list items shall be completed prior to release of final payment. Once the deficiencies have been addressed to Fayetteville Public Works Commission's satisfaction, a final acceptance letter will be issued to the Contractor.
- B. Prior to the final inspection, the Contractor shall complete the following:
  - 1. Sanitary Sewer:
    - i. Place a green paint mark at the curb, indicating the location of the lateral. The paint shall be heavily applied, so that the paint will last. The Contractor shall maintain and/or re-mark the locations as directed by the Owner until the project is accepted.
    - ii. Verify all plugs have been removed.
    - iii. Complete all restoration.
    - iv. Complete all required testing.
  - 2. Water
    - i. Place a blue paint mark at the curb, indicating location of the lateral. The paint shall be heavily applied so that the paint will last. The Contractor shall maintain and/or re-mark the locations as directed by the Owner until the project is accepted.

- ii. Verify all valves are fully open.
- iii. Verify all valves are accessible and can be operated.
- iv. Complete all restoration.
- v. Complete all required testing.

C. No separate payment shall be made for this work.

D. FINAL COMPLETION DOCUMENTATION

- 1. Prior to receiving final payment, the Contractor shall complete and/or provide the following:
  - i. Complete all punch list items to the satisfaction of the PWC Project Engineer;
  - ii. Satisfactorily resolve all customer complaints and obtain the required releases;
  - iii. Provide project record drawings; and
  - iv. Provide project close-out submittals.

1.050 Record Drawings

- A. Upon completion of the Work, the Contractor shall provide two complete sets of drawings recording all changes to the work to indicate actual installation. Changes shall be noted in legible red letters. These changes shall include but are not limited to the following:
  - 1. Change in pipe material.
  - 2. Size, depth, and installed elevations of mains.
  - 3. Location of valves, laterals, blow-offs, and other appurtenances

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

## **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 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.

## **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 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 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 ½ mile sections or less. In all cases, the time of disturbance between clearing and grubbing operations and actual sewer line construction should be kept to a minimum, particularly if ditches and temporary roads are utilized for access to the project.

## **02211 GRADING 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 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.

## **02222 EXCAVATION AND BACKFILLING FOR UTILITY SYSTEMS**

### GENERAL

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

### RELATED SECTIONS

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

### MATERIALS

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

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

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

### EXCAVATION

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

Where the line parallels a creek and/or ditch the excavated material shall be stockpiled opposite the creek, with the trench separating the two. Adequate drainage shall be provided for the stockpiles and

surrounding areas by means of ditches, dikes, or other approved methods. Grading shall be done to prevent surface water from entering the excavation. Any water within the trench shall be removed.

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

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

### TRENCH EXCAVATION

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

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

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

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

Excavation for manholes, meter vaults, or similar structures shall leave a minimum of 12-inches clear space around the structure. Removal of unsuitable material shall be as specified above. Preparation of

the subgrade shall be in accordance with the applicable detail and as directed by the Public Works Commission.

### PIPE LAYING

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

### TRENCH SAFETY

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

### TRENCH STABILIZATION (SHORING)

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

### DEWATERING

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

## BACKFILL

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

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

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

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

## BORROW EXCAVATION (Select Backfill)

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

## COMPACTION

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

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

Under structures	98
Utility Outfalls (Cross Country)	95

Compaction testing may be performed at the option of the PWC Project Coordinator, or as required by the responsible agency (i.e., City of Fayetteville, NCDOT, etc.). Compaction testing shall be done in

accordance with the responsible agency's requirements. Deficiencies shall be corrected by the Contractor without additional cost to PWC.

### FINISHED EXCAVATION

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

## **02272 EROSION CONTROL - GENERAL 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.

## **02273 TEMPORARY SILT FENCE**

### **GENERAL**

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

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

### **MATERIALS**

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

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

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

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

### **INSTALLATION**

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

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

## **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.

## **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 minimum 3 inch size on the basin side for stability and 1 inch or smaller (No. 57) on the flow side.

## **02301 BORING AND JACKING**

### **GENERAL**

Installation shall be by dry boring and jacking of a smooth wall steel pipe that is true to line and grade under roadways or where indicated on the plans, all in accordance with these specifications and recommendations of the pipe manufacturer. The Contractor shall notify the Public Works Commission's Project Coordinator a minimum of seven (7) days prior to any contemplated work. All required permits and approvals shall be secured prior to commencing work.

### **MATERIALS**

Materials to be used shall be appropriate for the installation method chosen by the contractor. All materials shall be submitted to the Public Works Commission for approval, prior to the Contractor commencing operations.

### **Dry Boring & Jacking**

The casing pipe shall be spiral welded or smooth wall steel pipe in accordance with ASTM A53, Grade B having minimum yield strength of 35,000 psi. The carrier pipe installed for water or force main applications, within the casing pipe shall be CL 50 ductile iron restrained joint pipe. Use of pressure class ductile iron pipe for water mains is acceptable, in accordance with Specification Section 02660. Mechanical joint restraint systems (i.e., Mega-Lugs, grip-rings, field-lok gaskets, etc.) are not an acceptable means of restraint within the casing pipe for water mains or force mains.

The material for the gravity sanitary sewer carrier pipe shall be CL 50 ductile iron restrained joint pipe. All carrier pipes in sewer service shall have the appropriate lining and coating. Use of restraining gaskets (i.e., field-lok gaskets) is an acceptable means of restraint for gravity sewer mains. Use of mega-lugs (or equivalent) is not approved for restraint within casings.

The casing pipe minimum size and minimum wall thickness shall be in accordance with the following chart unless indicated otherwise on the drawings.

CARRIER PIPE (dia, in inches)	MIN CASING SIZE (inches)	WALL THICKNESS (inches)	RAILROAD WALL THICKNESS (inches)
4	10	0.188	0.188
6	12	0.250	0.281
8	16	0.250	0.281

12	24	0.250	0.375
16	30	0.312	0.469
18	30	0.312	0.469
<b>24</b>	<b>36</b>	<b>0.375</b>	<b>0.532</b>
30	42	0.500	0.625
36	48	0.500	0.688

The Contractor may substitute larger size casing pipe (particularly for sewer mains where grade and alignment are critical) with the proper wall thickness. A manual steering head or other approved guidance system is recommended for casing pipe 30 inches and larger and/or bores exceeding 100 feet in length.

### **INSTALLATION**

Installation using the selected method shall be true to line and grade, where indicated on the plans, all in accordance with these specifications and recommendations of the pipe manufacturer. The Contractor shall notify all affected parties a minimum of seven (7) days prior to any contemplated work.

It is recommended that the Contractor perform each bore before beginning the sewer line construction. The boring shall be performed from the "upstream" to "downstream" direction maintaining the critical downstream invert elevation. Should the bore termination not be on grade, a revised plan shall be submitted to PWC Water Resources Engineering for approval. No additional payment shall be made for any required corrective actions. The boring operations shall be conducted at all times in such a manner so as not to create a hazard to nor impede the flow of traffic.

The Contractor will be responsible for any repair costs if any settlement or damage to the roadway or railroad bed resulting from the boring operation occurs within one year after completion of the work. The Contractor shall maintain proper insurance as required by the permitting agency.

The Contractor shall submit all requested information as required by the permitting agency.

### **Dry Boring & Jacking**

The alignment and grade of the jacking shall be carefully established prior to beginning the operation. A licensed professional land surveyor shall provide staking to establish the correct alignment and grade. The licensed surveyor (or a licensed professional engineer) shall provide cut sheets to the Public Works Commission and the contractor.

Lubricants such as bentonite may be applied to the outside of the pipe to reduce frictional resistance during jacking. The boring auger shall not be a greater diameter than the outside diameter of the encasement and removal of the excavated material ahead of the pipe will be held to a minimum to prevent the formation of voids.

Voids occurring outside the encasement pipe shall be filled with 1:3 Portland cement grout and the ends of the encasement pipe closed with masonry after the carrier pipe placement. The voids shall be filled with 1:3 Portland cement grout at sufficient pressure to prevent settlement of the roadway or railroad. The method of grouting shall be as approved by the permitting agency. If the installed casing is deemed to be unusable by the Public Works Commission and/or the permitting agency, the casing shall be abandoned by bricking each end and filling the casing with grout, or as directed by the permitting agency.

The Contractor shall locate all existing utilities in the proposed location of the jack and bore. Design of the casing shall be in accordance with PWC standards, and subject to PWC approval. The casing should have a minimum separation of 12-inches from existing utilities.

In the event two parallel casings are being installed, the minimum separation between the outside edges of each casing shall be five (5) feet, or as directed by the permitting agency. In the event of a conflict between this specification and the permitting agency's requirements, the more stringent shall apply.

The use of "back-taps" is not encouraged. The design engineer shall take all necessary steps to determine the location of existing utilities and evaluate the necessity of a back-tap. Should it be necessary to install a back-tap, the top of casing shall be a minimum of 12-inches below the bottom of the pipe to be tapped. All pipe and fittings from the tap location to the carrier pipe shall be restrained joint. Use of mechanical joint restraint systems (i.e., mega-lugs, grip-rings, etc) are allowed in such instances. The Public Works Commission shall review and approve all proposed back-tap locations.

## **SECTION 02350**

### **STEEL H- PILES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### **1.2 SUMMARY**

- A. Section includes steel H-piles.

##### **1.3 UNIT PRICES**

- A. Contract Sum: Base Contract Sum on number and dimensions of piles indicated from tip to cutoff, plus not less than 12 inches of overlength for cutting piles at cutoff elevations.
- B. Work of this Section is affected as follows:
  - 1. Additional payment for pile lengths in excess of that indicated, and credit for pile lengths less than that indicated, is calculated at unit prices stated in the Contract, based on net addition or deduction to total pile length as determined by The Engineer and measured to nearest 12 inches.
  - 2. Additional payment for number of piles in excess of that indicated, and credit for number of piles less than that indicated, is calculated at unit prices stated in the Contract.
  - 3. Unit prices include labor, materials, tools, equipment, and incidentals for furnishing, driving, splicing, cutting off, capping, and disposing of cutoffs.
  - 4. No payment is made for rejected piles, including piles driven out of tolerance, defective piles, or piles damaged during handling or driving.

##### **1.4 DEFINITIONS**

- A. Practical Refusal: Practical refusal is count of hammer blows that exceed 20 blows per inch with the hammer operating at a determined setting and results

in no more than 1/4 inch of pile rebound per blow.

- B. Pile Heave: Pile heave is upward movement of a pile from its originally driven elevation.
- C. Redriving: Redriving occurs when a pile which has been previously driven to required design elevation, required driving criteria, or to practical refusal and is re-driven with same methods, materials, and driving equipment used for test piles and production piles.

Perform redriving when required to reset piles that have heaved, to advance piles that encountered high driving resistance due to excess pore water pressures, to advance piles that encountered low driving resistance and require pile set up, or for other reasons as determined by The Engineer.

- D. Professional Engineer: Registered Professional Engineer meeting project qualifications and who is hired by Contractor.
- E. The Engineer: The Engineer or designated representative hired by Owner.
  - 1. Approvals given by The Engineer shall not relieve Contractor of its responsibilities for performing the work in accordance with Contract Document requirements.

#### 1.5 **PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site prior to moving equipment onto the site.
- B. Discuss following as a minimum:
  - 1. Work scope, schedule, and sequence.
  - 2. Driving procedures.
  - 3. Acceptance criteria.

#### 1.6 **ACTION SUBMITTALS**

- A. Submit for review and acceptance in accordance with Section 01330 "Submittal Procedures," product data and shop drawings showing materials of construction, installation equipment, and details of installation.
- B. Product Data: For each type of product.

- C. Shop Drawings: Show fabrication and installation details for piles, including size of steel sections, lengths, and details of pile accessories.
1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
  2. Details of top connection to structure, splice locations, and pile tip reinforcement or points where applicable.
  3. Include details of equipment assemblies and proposed templates. Indicate dimensions, weights, loads, and required clearances. Include:
    - a. Crane, leads, hammer make and model, cap block, pile helmet, cushion block dimensions and material type, and anvil.
    - b. Ram mass, anvil mass, rated stroke, rated energy range, rated speed, steam or air pressure, pile driving cap, make and mass, and other applicable data. Equipment is subject to satisfactory field performance.
    - c. Describe pile slings, chokers, and other apparatus or mechanisms used to support piles prior to and during driving.
    - d. Pile splice locations and details of proprietary splices to be used.
    - e. Details and drawings of proposed templates.
  4. Submit results of preliminary wave equation analysis for pile type and proposed pile driving system.
    - a. Submit documentation to support the selection of soil damping and quake values used in the wave equation analysis.
    - b. Submit preliminary corresponding driving stresses and overall installation procedures. Include installation procedures to limit driving stresses to mitigate pile damage.
    - c. Perform sufficient analysis to address variability in anticipated pile lengths and pile splices.
    - d. Perform, seal, and sign, wave equation analysis by a Professional Engineer.
    - e. Submit a revised wave equation analysis whenever there is a change in pile type, pile installation equipment, or as requested by The Engineer.
  5. Submit final pile driving acceptance criteria based on the proposed pile driving system.
  6. Submit a plan showing location of each pile, identification number, driving sequence, and a summary table to show coordinates, pile length, and cutoff and tip elevations.
  7. Where applicable, submit a description of the proposed pre-augering or pre-drilling methods, depths, and equipment including auger type and size.
  8. Submit shop drawings and structural design calculation and analysis data

sealed and signed by qualified Professional Engineer responsible for their preparation who is registered in the State of project work site.

- D. Work Requiring a Submittal: Do not start fabrication or installed materials prior to approval of such item. Fabrication performed, materials purchased, or on-site construction accomplished which does not conform to approved shop drawings and data shall be at Contractor's risk. Remove non-compliant materials and replace with approved materials. Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

#### 1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, qualified Professional Engineer, surveyor, and welder.
- B. Certificates:
  - 1. Mill Certificates: Show chemical composition and physical properties, including yield strength, of steel to be furnished.
  - 2. Welder's Certificates: Date within one year of submittal, attesting welders are certified and qualified for type and nature of welding to be performed.
  - 3. Manufacturer's Certificates: Submit data for pile splices, installation instructions, and other relevant data.
- C. Reports:
  - 1. Mill Test Reports: For steel H-piles, steel castings, and steel plate, signed by manufacturer.
  - 2. Pile-Driving Records: Submit within three days of driving each pile.
- D. Certified Piles Survey:
  - 1. Within three working days after a driven pile is deemed to be permanently obstructed or when an installed pile is observed to exceed specified tolerances, submit a sketch to The Engineer showing as-driven locations of driven piles immediately adjacent to the pile and established building lines as indicated on Drawings.
  - 2. Submit within two weeks of completing all pile driving, a plan showing designation number of each pile and its as-driven location with respect to specified tolerances and established building lines as indicated on Drawings, including final as-installed pile tip and pile cutoff elevations.
- E. Preconstruction Photographs: Photographs or video of existing conditions of adjacent construction.

## 1.8 **QUALITY ASSURANCE**

- A. Pile Installer Qualification:
  - 1. Pile driving company experienced in type of specified piling work and having at least five years' experience and at least five successful installations of same general type and class of piles.
  - 2. Superintendent: Have at least five years' experience in pile driving and operations of pile type, size, length, and ground conditions similar to project requirements.
  - 3. Use available data to plan and execute the work, including geotechnical report, Contract Documents and other pile driving records or summaries of piles driven on nearby projects, and pile driving behavior.
- B. Surveyor Qualifications: Professional Land Surveyor hired by Contractor and registered in the State in which the work is performed and having not less than 5 years' experience performing surveys on similar projects.
- C. Professional Engineer Qualifications: Engineer hired by Contractor and registered in the State in which the work is performed and having not less than 5 years' experience in pile design on similar projects.
- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

## 1.9 **DELIVERY, STORAGE, AND HANDLING**

- A. Deliver piles to Project site in such quantities and at such times to ensure continuity of installation. Develop and submit plans for delivery, storage, and handling of piles for review and approval to The Engineer. Handle and store piles at Project site to prevent buckling or physical damage.
- B. Do not dump piles. Store piles to prevent low spots where water can accumulate. Keep stored piles clean. Stack piles during delivery and storage:
  - 1. So that each pile is maintained in a straight position and is supported every 10 feet or less along its length, including ends, to prevent exceeding maximum camber or sweep.
  - 2. Not more than 5 feet high.
- C. Lift piles using a cradle or multiple point pick-up system to ensure that maximum permissible camber or sweep is not exceeded due to insufficient support. Inspect piles for excessive camber, sweep, and damage before transporting them from storage area to driving area and immediately prior to

placement in the driving leads.

1. Maximum Permissible Camber or Sweep: 2 inches over pile length.
  2. Reject piles having excessive camber or sweep.
- D. Handle in such a way as to minimize bending stresses. Brace piles in plumb and rigid leads to prevent whipping during driving.

#### 1.10 FIELD CONDITIONS

- A. Project Information: Geotechnical data has been prepared for this Project and is available for information only. Owner is not responsible for interpretations or conclusions drawn from this data.
- B. Vibration Limit Criteria: Limit pile installation operations to prevent damage to adjacent buildings, structures, utilities, pipes, or other features near the site. Be solely responsible to determine the maximum vibration at each facility; however, in no case shall the following be exceeded:
1. Do not exceed peak particle velocity (PPV) limits at the ground surface at existing residences, structures, utilities, and existing water mains:

Peak Particle Velocity (inch per sec.)	Maximum Frequency (Hz)
Over 40	2.0
30 to 40	1.5
20 to 30	1.0
Less than 20	0.5

- C. Vibration Monitoring:
1. Monitor peak particle velocities using a minimum of one seismographs operated by personnel trained in their use during pile driving. Seismograph location shall be mutually agreed upon by The Engineer and Contractor.
  2. The Engineer may direct that additional vibration monitoring be performed if conditions warrant such action.
  3. Perform vibration monitoring on a continuous basis throughout pile driving operations.
- D. Be completely responsible for damages resulting from pile driving operations and at a minimum take whatever measures as necessary to maintain peak particle velocities within specified limits.

- E. The noise level due to piling at any residential zones shall be less than 75 decibels (dBA), or less than that imposed by local Authority Having Jurisdiction, whichever is stricter.

#### 1.11 LINES AND GRADES

- A. Employ a Professional Land Surveyor to establish lines and levels. Be responsible for correct location, orientation of piles, and keeping a record of piles driven, as well as a record of amount of uplift or settlement of individual piles. Give daily records of uplift or settlement measurements to The Engineer.
- B. Establish a baseline and datum elevation as approved by The Engineer. Stake and maintain pile locations and establish required elevations, including elevation of top of pile prior to cutting off any length of pile.
- C. Within one working day, provide The Engineer with a written tabulation indicating the following information for each pile:
  - 1. Pile number.
  - 2. Elevation of top of pile prior to cutting or build up, measured to nearest 0.10 feet.
  - 3. Elevation of top of pile after cutting or build up, measured to nearest 0.10 feet.
  - 4. Deviation from plan location at cut-off grade, measured to nearest 0.01 feet.

#### 1.12 OBSERVATION AND INSPECTION

- A. Perform pile driving installations under full-time observation of the The Engineer. Notify The Engineer at least 48 hours in advance of starting or restarting any pile driving work. Do not proceed with pile driving operations unless The Engineer is present; piles not observed by The Engineer will not be accepted.
- B. Give The Engineer safe access to the work at all times. Furnish The Engineer with materials and facilities for checking conformance with Contract Document requirements.
- C. Provide legible markings on each pile in one-foot increments, starting at the tip, and using enlarged numerals to indicate pile length at 5 feet intervals. Maintain readable markings slinging, handling, and driving. Orient piles in the leads so markings are visible from a safe location during driving.
- D. Have available and provide to The Engineer two saximeters in good working condition for use during pile driving operations.

- E. Install piles in the presence of the The Engineer. Piles not installed in The Engineer's presence will not be accepted.
- F. The Engineer will maintain a record copy of each pile driven. Records will:
  - 1. Include pile designation number, driving resistance record, pile length as driven, date and time of driving, time delays during driving, tip and cut off elevations, deviations from drawing location and from plumb or batter, hammer data and other applicable data.
  - 2. Show unusual events during installation including interruptions during driving, obstructions, re-driving, and other relevant conditions.
  - 3. Show driving resistance record including number of blows per foot for each foot of driven length and number of blows per inch for final 6 inches of penetration

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Acceptable Manufacturers - Pile Accessories: Subject to compliance with requirements, provide products by one of the following or equal:
  - 1. Associated Pile and Fittings Corporation.
  - 2. L.B. Foster Piling.
  - 3. Titus Steel
  - 4. Versa Steel, Inc.

### **2.2 MATERIALS – STEEL H-PILES**

- A. Pile Hammer: Single or double acting, air-, steam-, hydraulic-, or diesel-powered type capable of consistently delivering adequate peak-force duration and magnitude to develop the ultimate capacity required for type and size of pile driven and character of subsurface material anticipated at a blow count that does not cause damage to the pile. Do not use drop hammers.
  - 1. Keep hammer in good mechanical condition.
  - 2. Operate hammer at speed and pressure recommended by manufacturer
  - 3. When making final driving resistance, have hammer operating at energy required by approved submittals. Maintain fuel setting, boiler or air pressure recommended by manufacturer and employ the proper size hose and connections.
- B. At The Engineer's discretion, a vibratory hammer of sufficient capacity (force and amplitude) may be used to drive steel bearing piles to a depth that will allow access to an impact hammer or to stand the pile. The Engineer will determine the depth to which the

piles may be installed using a vibratory hammer; however, use an impact hammer to drive all bearing piles for at least the final 3 feet of penetration.

- C. Closed-End or Double-Acting Diesel Hammers: Equip with a bounce-chamber pressure gauge in good working order or other similar approved apparatus to measure gas chamber pressure inside the hammer and total hammer energy. Mount gauge near ground surface so it can be easily read.
- D. Open-Ended or Single-Acting Diesel Hammers: Equip with a scale, jump stick, that extends above the ram cylinder that allows one to visually determine the hammer stroke at all times. Make access of the jump stick available to The Engineer.
- E. Hammer Cushions and Driving Caps:
  - 1. Between hammer and top of pile, provide hammer cushion and steel driving cap as recommended by hammer manufacturer and as required to drive pile without damage.
  - 2. Combine driving helmet or cap and cushion block capable of protecting pile head, minimizing energy absorption and dissipation, and transmitting hammer energy uniformly and consistently during entire driving period.
  - 3. Fit driving helmet or cap loosely around pile top so pile may rotate slightly without binding within the driving head.
- F. Leads:
  - 1. During driving operations, firmly hold pile and hammer in proper alignment by fixed driving leads of sufficient length to prevent the use of a follower.
  - 2. Use leads adapted for driving of inclined piles to drive battered piles.
  - 3. Include intermediate supports for pile in the leads to reduce unbraced length of the pile during driving.
- G. Do not allow changes in the selected pile driving equipment after being approved, except as directed by The Engineer. No additional contract time shall be allowed for Contractor proposed changes to methods, materials, and equipment.
- H. Use driving equipment to drive production piles of same type and operated in same manner as used to drive test piles. Do not use driving equipment that damages piles.
- I. Pre-Augering Equipment: Capable of drilling to depths indicated on Contract Documents.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Site Conditions: Do not start pile-driving operations until earthwork has been complete.
- B. Prior to commencing with the Work in this Section, carefully inspect job site and verify that piles may be installed in accordance with the Contract Documents. Verify that site conditions will support pile driving equipment and that adequate space is available to safely lift and install piles.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 GENERAL

- A. Install piles so they bear in hard clay soil stratum. Redrive piles obstructed above the bearing soils after removing the obstruction or after being relocated as approved by The Engineer.
- B. Discrepancies:
  - 1. In the event of discrepancy, immediately notify The Engineer in writing.
  - 2. Do not proceed with construction in areas of discrepancy, until all such discrepancies have been fully resolved.
- C. When piles are located in an area where site grading is required, do not drive piles until grading work is complete. Correct changes in grade resulting from pile driving without additional compensation.
- D. Pile Tips: Equip piles with manufactured steel reinforcing tips.

### 3.3 PREDRILLING AND JETTING

- A. Predrilling for steel H-piles is not permitted unless approved by The Engineer. Have predrilling use, equipment, and methods approved by The Engineer prior to commencing predrilling operations.
- B. Predrill Diameter: No more than 2 inches larger than pile web depth. Backfill hole with sand after driving is complete.
- C. Predrilling Depth: As approved.
- D. Dispose of spoil materials resulting from predrilling on-site as directed by The Engineer.
- E. Jetting of H-Piles is not permitted.

- F. When authorized by The Engineer, use jetting to assist driving piles through strata that cannot be penetrated practicably by use of the hammer alone. After completing penetration of the strata requiring jetting, discontinue jetting and resume driving with the hammer alone. Seat jetted piles by driving not less than 5 feet after jetting has been stopped.
- G. Discontinue jetting when the pile tip is approximately 3 feet above the required pile tip elevation. Drive pile the final 3 feet of penetration.
- H. Spudding is not permitted.

#### 3.4 **DRIVING CRITERIA**

- A. Final pile driving acceptance criteria will be approved by The Engineer based on the Contractor's submittal of proposed means and methods for the pile driving.
- B. Drive each pile to tip elevations indicated on Drawings.
- C. Drive each pile to approved final driving resistance.
- D. Drive each pile to minimum tip elevation shown on Drawings and satisfy final driving resistance.
- E. Express final driving resistance as number of blows required to provide the required bearing.
- F. When the determination of the final penetration resistance is being made, operate hammer at rated speed for steam or air hammers. Maintain boiler or air pressure recommended by manufacturer, employing proper size hoses and connections. Operate other hammer types to transmit specified energy to the pile.
- G. Do not drive piles beyond practical refusal.
- H. Perform pile re-drives at the discretion of The Engineer.
- I. The Engineer may waive or modify the requirements for final driving resistance based on pile driving conditions.

#### 3.5 **INSTALLATION**

- A. Inspect piles when placed in the leads immediately before driving. Handle piles to protect pile coatings. Repair damage or defects in pile coatings as specified.

- B. Take care to avoid damage in placing the pile in the leads and during pile driving operations. Laterally support piles during driving, but do not restrain from rotation in the leads. Where pile or projecting reinforcement orientation is essential, take special care to maintain the orientation during driving.
- C. Once pile driving has begun, keep pile alignment and batter constant. Monitor pile alignment and batter during driving with an accurate level. Drive piles continuously and without interruption until either meeting required tip elevation and corresponding acceptance criteria or attaining practical refusal.
- D. Cutoff steel H-piles at the elevations shown on Drawings by an approved method. Use templates or other devices to ensure cut off will be true and level. Where cutoff is below existing ground or mudline elevation, complete excavation, sheeting, and dewatering before driving pile to cutoff elevation.
- E. Legally dispose offsite pile cutoff lengths less than 4 feet unless used to extend another pile. Where practical, use cutoff lengths greater than 4 feet to extend the length of another pile.

### 3.6 **PILE HEAVE**

- A. Survey tops/butts of piles immediately after driving and at completion of driving all piles within a pile cap.
- B. Re-drive piles that have heaved more than 1/2 inch above or below previous top/butt elevation. Re-drive piles that have heaved more than 1/2 inch above previous top elevation to original top elevation without additional compensation.

### 3.7 **PILE SPLICES**

- A. Splice sections of steel H-piles with the approved splice detail in accordance with Contract Documents. Use no more than one splice per pile in making up the estimated pile length. Do not locate pile splices used to make up the estimated pile length shall occur within 10 feet of pile tip or pile cutoff elevation.
- B. A pile that has not reached the required final driving resistance when the top has been driven to the cutoff elevation shall be spliced, as shown and approved, and driven to a sufficient depth to develop the required driving resistance.
- C. Secure lengths of piles to be spliced in proper alignment with no eccentricity or angle between them.
- D. Weld pile splices conforming to recommendations of splice manufacturer.

Electroslag welding is not permitted.

### 3.8 **PILE ACCEPTANCE**

- A. Only piles meeting the requirements of this Article will be accepted for payment.
- B. Piles that are damaged below cut-off elevation during driving will be rejected.
- C. Piles indicating sudden or peculiar decrease in penetration resistance during driving will be assumed broken and will be rejected unless The Engineer's review of available data indicates that sudden decrease in driving resistance is due to natural, subsurface conditions, and continued acceptable driving behavior is observed.
- D. Upon comparing a pile's performance with that of other driven piles and based on knowledge of subsurface conditions, The Engineer will determine if pile has been damaged sufficiently to make it unacceptable. If this is the case, the pile will be rejected. If Contractor does not agree that a pile is incapable of performing satisfactorily, testing may be required.
- E. During driving, The Engineer will evaluate the piles for alignment, buckling, visible breakage, or other irregularities. Piles that fail to meet the requirements of Contract Documents or for any other justifiable reason are unacceptable will be considered defective and shall be rejected.
- F. Removal of piles driven in permanent work for convenience, for prosecution of the work, or for any other reason, except at the direction of The Engineer, shall be replaced with another pile. Where piles are withdrawn, backfill pile hole with clean granular fill. Perform work without additional compensation.
- G. Contractor will be compensated only for rejected piles that are driven within the specified tolerances and whose damage is not attributed to Contractor's error in the opinion of The Engineer.
- H. Cut off piles that are damaged, mis-located, or driven out of alignment and cannot be removed, at least 3 feet below planned cut off and abandoned. Drive additional piles as directed by The Engineer without additional compensation.
- I. Submit plans for correcting defective work to The Engineer for approval before performing corrections. Pay for all additional costs including engineering, concrete work, steel, forms required for pile caps, and other foundations because of having to drive additional piles to replace rejected piles attributable to Contractor's error.

### 3.9 OBSTRUCTIONS

- A. Remove obstructions encountered within 10 feet of ground surface which prevent pile advancement in accordance with the acceptance criteria and within tolerances without additional compensation. Clear obstruction by excavation, pre-augering, or other feasible means as approved by The Engineer and then redrive pile in the original location without additional compensation.
- B. If obstructions are encountered below 10 feet from ground surface and piles cannot be advanced to proper bearing strata in accordance with acceptance criteria and within specified tolerances, resort to methods to install pile as required, including excavation, predrilling, or other feasible means as approved by The Engineer. If in the judgment of The Engineer, Contractor is unable to properly complete any pile by resorting to such methods, The Engineer may order an additional pile for which Contractor will be paid in accordance with Contract unit price.
- C. Take care when obstructions are removed by excavation so as not to eliminate lateral support of adjacent individual piles or structures. Backfill excavated areas prior to re-driving the pile.
- D. If in the opinion of The Engineer, a pile has been damaged by an obstruction during driving, abandon and drive a replacement pile with payment being made in accordance with Contract unit price.
- E. Cut off or pull and re-driven abandoned piles at the discretion of The Engineer. Payment for piles cut off and abandoned and for pile removal will be made as delineated in project specifications.

### 3.10 TOLERANCES

- A. Install piles in correct locations, orientations, and alignments, both laterally and longitudinally, and to vertical lines indicated. Prior to driving piles, The Engineer will provide a permanent base line for inspection of pile placement. Maintain base line during production pile installations.
- B. Maximum Tolerances:
  - 1. A final lateral deviation from planned horizontal location at cutoff elevation: 3 inches for vertical piles.
  - 2. A vertical deviation of not more than 1-1/2 inches above or more than 4 inches below indicated cutoff elevations.
  - 3. A variation of not more than 1/4 inches per foot of pile length from vertical.
- C. Manipulation of installed piles shall not be permitted.

- D. Where installed piles exceed the specified lateral deviation tolerances, The Engineer has the option to determine the total load on individual piles based on the survey information.
  - 1. If the load on any pile exceeds the specified load capacity, The Engineer will provide a design and corrections shall be made in accordance with the design without additional compensation.

### 3.11 FIELD QUALITY CONTROL

- A. Tests and Inspections:
  - 1. Weld Testing: In addition to visual inspection, test and inspect welds according to AWS D1.1/D1.1M and inspection procedures listed below, at testing agency's option. Correct deficiencies in Work that test reports and inspections indicate do not comply with the Contract Documents.
    - a. Liquid Penetrant Inspection: ASTM E165.
    - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
    - c. Radiographic Inspection: ASTM E94, minimum quality level "2-2T."
    - d. Ultrasonic Inspection: ASTM E164.
- B. Steel H-piles will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

### 3.12 DISPOSAL

- A. Remove withdrawn piles and cutoff sections of piles from site, and legally dispose of them off Owner's property.

## **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 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

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.

## **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 1/4" (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.

## 02573 PERMANENT PAVEMENT PATCH

### GENERAL

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

### REMOVAL

The Contractor shall cut the existing pavement to straight uniform widths parallel and perpendicular to the roadway. Jagged saw cuts will not be acceptable. The pavement shall be removed its entire depth. The Contractor shall properly dispose of all removed pavement. If the Contractor elects to mill the asphalt, the millings cannot exceed two (2) inches in size, and shall be swept into the trench and re-compacted. The removal limits shall extend a minimum of six (6) inches into solid undisturbed base course prior to patching or as directed by the Public Works Commission.

Pavement removal shall not exceed 3,000 feet total for the entire project at one time. It shall be the Contractor's responsibility to maintain the trench (swept, wetted, compacted, etc.) until paved.

### PAVEMENT

Replacing the pavement shall consist of the following:

#### Tack Coat

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

#### Asphalt Surface Course

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

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

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

### **Base Course**

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

The Contractor, with permission of the Public Works Commission, may use asphalt concrete intermediate course, placed in a minimum four (4) inch layer extending a minimum of six (6) inches beyond the edge of the trench as indicated on the Permanent Patch Detail. The Asphalt Concrete Intermediate Course shall be in accordance with the North Carolina Department of Transportation Standard Specifications (latest revision), and the NCDOT HMA/QMS Manual (latest revision).

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

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

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

## **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 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 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 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**:

#### **NOMINAL**

<b><u>SIZE</u></b>	<b><u>PRESSURE CLASS</u></b>	<b><u>THICKNESS (In.)</u></b>
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 JOINT**

#### **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 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.

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.

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.

## **02730 SANITARY SEWER SYSTEMS**

### **GENERAL**

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

### **RELATED SECTIONS**

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

### **MATERIALS**

#### **SEWER MAINS**

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

#### **DUCTILE IRON PIPE**

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

For aerial crossings which are 4 inches through 12 inches in diameter, manufactured restrained joint ductile iron pipe Class 53, or Class 53 flanged ductile iron pipe shall be utilized in accordance with the standard Public Works Commission detail for aerial crossings. Mega-lugs, field-lok, and gripper rings are not an allowable means of restraint for aerial crossings. For aerial crossings larger than 12 inches, or as noted specifically on the plans, flange joint ductile iron pipe, Class 53, shall be utilized in accordance with the standard Public Works Commission details. The location of flanges shall be specifically designed for each application. The flange pipe shall be in accordance with ANSI/AWWA C-115/A21.15. Threads for threaded flange pipe shall be in accordance with ANSI B2.1, shop fabricated as outlined by AWWA 115 with serrated faces furnished on the pipe, completely factory installed. Welding of flanges to the body of the pipe will not be acceptable. Ductile iron fittings and flanges shall be in accordance with ANSI/AWWA C-110/A21.10 with a minimum working pressure of 250 psi. Gaskets shall be full faced SBR rubber per ANSI/AWWA C-111/A21.11 with a minimum 1/8" thickness. Linings and coatings shall be as outlined for ductile iron pipe.

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

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

### **PVC PIPE**

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

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

### **SEWER FITTINGS**

#### **Ductile Iron Push-on Fittings:**

Ductile iron sewer fittings on PVC mains shall be deep bell, gasketed joint, and air test rated. Gasket grooves shall be machined in the factory. Material shall be ductile iron, in accordance

with ASTM A536, Grade 65-45-12 and ASTM F1336. Wall thickness shall meet the requirements of AWWA C153. Gaskets shall have a minimum cross sectional area of 0.20 square inches, and conform to ASTM F477.

All ductile iron fittings shall have an interior coating of Protecto 401, or approved equal. All ductile iron fittings on PVC pipe shall provide a flow line that provides a smooth transition between the materials. Ductile iron fittings shall be as manufactured by the Harrington Corporation (Harco), or approved equal.

### **Mechanical Joint Fittings:**

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

### **PVC Fittings:**

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

### **Ductile Iron Pipe Size x SDR26 Transition Adapter:**

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

PVC – All PVC transition fittings shall be made from DR 18 C900 pipe stock. The C900 pipe stock shall meet the requirements of AWWA C900/C905, and have a minimum cell classification of 12454 as defined in ASTM D1784. The wall thickness shall meet or exceed DR 18. PVC

transition fittings shall have SBR gaskets in accordance with ASTM F477. All six (6) inch and eight (8) inch adapters shall be molded. Molded fitting joints shall be 235 psi rated, in accordance with ASTM D3139, and shall have SBR rubber gaskets. Four (4) inch, ten (10) inch and 12 inch transition adapters shall have SBR Rieber style gaskets meeting ASTM F477. Joints shall be 235 psi rated, in accordance with ASTM D3139 for the C900 (ductile iron) bell, and in accordance with ASTM D3212 for the sewer (SRD26) bell. Molded C900 bell depths shall comply with AWWA C907. Fabricated (4-inch, 10-inch and 12-inch) bell depths and molded sewer (SDR26) bell depths shall be in accordance with ASTM F1336. PVC transition adapters shall be manufactured by the Harrington Corporation (Harco), GPK Products, or approved equal.

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

**Saddles:**

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

**SEWER LATERALS**

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

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

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

	PVC Main	DI Main
DI Lateral	DI fitting or approved saddle	MJ fitting or approved saddle

PVC Lateral	PVC fitting or approved saddle	MJ fitting with transition gasket or approved saddle
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Sewer laterals shall be in accordance with these Specifications and PWC standard details S.10, S.11, and S.12.

### **PRECAST CONCRETE MANHOLES**

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

Manhole steps shall be placed in all manholes and shall be steel reinforced (½" grade 60) copolymer polypropylene plastic steps in accordance with ASTM C-478 for material and design. The steps shall be spaced 16" on center with serrated treads and wide enough to stand on with both feet.

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

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

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

### **SELECT BEDDING MATERIAL**

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

### **INSTALLATION**

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

### **PIPE LAYING**

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

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

The pipe shall be laid upgrade, beginning at the lower end with the tongue or spigot ends pointing in the direction of the flow to the correct line and grade, unless otherwise approved by PWC. The pipe section to be installed shall be aligned by batter board or laser beam with the last installed pipe section. Mechanical equipment should not be used to assemble the pipe. Pipe shall be assembled in accordance

with the pipe manufacturer's instructions. Any damage resulting from the use of mechanical equipment shall be replaced as directed by PWC.

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

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

### **ALIGNMENT AND GRADE**

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

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

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

Select bedding material shall be placed a minimum of four inches (4") and a maximum of six inches (6") under the pipe for full width of the trench and halfway up the pipe on the sides. Bedding material shall be placed in layers not exceeding six inches (6") loose thickness for compacting by vibratory mechanical tamps under the haunches and concurrently on each side of the pipe for the full width of the trench. The final result shall be "Class B" bedding for rigid pipe. If the existing material under the pipe bedding material is unsuitable, the unsuitable material shall be removed and replaced with select bedding material (No. 57 or No. 5 stone), as authorized and approved by the Public Works Commission Project Coordinator.

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

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

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

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

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

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

The invert channel shall be constructed of brick and mortar, in accordance with Public Works Commission standard details. **Precast inverts are not allowed.** The invert channel shall be smooth and semicircular in shape conforming to the inside of the connecting sewer section. Changes in direction of flow shall be made with a smooth curve as large as a radius as the size of the manhole will permit without a decrease in flow velocity. Changes in size and grade of the channel shall be made gradually and evenly. The invert channel walls shall be constructed to three quarters (3/4) of the height of the crown of the outlet sewer and in such a manner not to

obstruct maintenance, inspection or flow in the sewers. The inverts shall have a minimum slope of one (1) percent across the bottom of the manhole. A shelf shall be provided on each side of any manhole invert channel. Inverts in manholes with standing water will not be acceptable. The shelf shall be sloped not less than 1:12 (min) and no more than 2:12 (max). The bottom of the boot for the new sewer main or lateral shall be set one inch above existing shelf unless otherwise indicated.

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

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

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

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

### **CONNECTION TO EXISTING MANHOLES OR LIFT STATIONS**

All connections to existing manholes and/or lift stations shall be approved by the Public Works Commission. Where new mains are to be connected to existing active sanitary sewers, the

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

### **PIPE TO MANHOLE CONNECTOR (BOOT)**

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

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

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

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

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

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

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

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

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

### **INSIDE DROP MANHOLE STRUCTURE**

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

### **CLEANING**

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

### **TESTING**

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

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

For all other projects: No testing shall be completed until all utilities are installed, prior to preparation of the road subgrade. The Contractor may elect to perform testing to satisfy them that the sewer utility is

installed properly prior to commencing installation of other utilities. However, such testing shall not be construed as acceptance by PWC.

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

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

**Vacuum Testing Manholes:**

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

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

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

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

Vacuum testing backfilled manholes is not recommended in the presence of groundwater. Vacuum testing a backfilled manhole that is subjected to hydrostatic pressure may exceed the design limits of the flexible connectors and could lead to failure of the structure, joints, and/or connectors. Where groundwater is present a reduction in the vacuum pressure applied to the manhole will be required. The vacuum shall be reduced by 1 inch of Mercury for every 1 foot of hydrostatic head between 12 feet and 21 feet. A vacuum test should not be performed when the hydrostatic head exceeds 22 feet. See the chart below:

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

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

\*\*Do not perform vacuum test

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

**Mandrel Testing:**

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

**Air Testing:**

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

**Air Test for PVC Pipe**

The low pressure air test on PVC pipe shall be performed with satisfactory results in accordance with ASTM F1417 "Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using

Low-Pressure Air". The pipe, including lateral assemblies, shall be plugged and air added slowly until the internal pressure of the line is raised to 4.0 psi. After the pressure of 4.0 psi is obtained, regulate the air-supply so that the pressure is maintained between 3.5 and 4.0 psi for at least two (2) minutes, depending on air/ground temperature conditions. The pressure will

drop slightly until equilibrium is obtained; however, a minimum of 3.5 psi is required. Once the 3.5 psi is maintained, the test will begin. If the pressure drops 1.0 psi within the time indicated below, the test fails.

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

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

### **HYDROSTATIC TESTS**

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

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

pipe in a manner satisfactory to the Public Works Commission. Before applying the specified test pressure, all air shall be expelled from the pipe.

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

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

## 02831 CHAIN LINK FENCING

### GENERAL

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

The erected fence shall meet the following requirements:

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

### MATERIALS

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

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

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

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

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

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

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

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

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

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

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

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

**Locks:** Locks will be provided by the Owner.

## **INSTALLATION**

**General:** Installation shall be made in a workmanlike manner by skilled workers experienced in the erection of this type of fence and in accordance with the manufacturer's recommendations. The fence shall be erected on a previously prepared surface to the lines and grades indicated on the plans.

**Post Setting:** All posts shall be set plumb and in alignment into a 36-inch concrete footing of proper size and shape so as to furnish sufficient support to withstand any strain or shock ordinarily brought to bear on a fence of this character. The concrete strength shall be 3000 psi

(ASTM C-94) and the foundations a minimum of 9 inches in diameter for line post and 12 inches for terminal post.

Concrete shall be thoroughly compacted so as to be free of voids and finished in a dome.

Straight runs shall not exceed 500 feet between brace posts. Concrete shall cure a minimum of 72 hours before any further work is done on the posts.

**Fabric:** The fabric and barbed wire shall be stretched to the proper tension as recommended by the manufacturer and securely fastened to the framework members to result in a straight fence line without sagging. The bottom of the fabric shall be held as uniformly as is practicable to the finished grade.

## **02931 SOD**

### **GENERAL**

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

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

### **MATERIAL**

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

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

### **SOIL BED PREPARATION**

Before landscape construction is to begin, the site shall be cleaned and disposed of brush, rubbish, stones, gravel and other foreign material within the area to be landscaped. Exposed

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

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

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

### **PLACING SOD**

The Contractor and his landscape subcontractor shall coordinate the placing of the sod to begin within 24 hours after the topsoil base preparation is completed and accepted by the Public Works Commission. Sod shall be brought to the site as near to the time of placing as possible. Store sod in the shade, and keep watered particularly in extreme hot and dry condition to insure vitality and to prevent the dropping off of soil during handling. During wet weather, the sod shall be allowed to dry sufficiently to prevent tearing. Handling shall be done in a manner which will prevent tearing, breaking, drying or other damage. Carefully place sod in rows with the longer

side perpendicular to slopes and the ends staggered in each successive row in a brick-like pattern. Butt the ends and sides together tightly and do not overlap or stretch the sod. Do not leave any voids or gaps. Unavoidable gaps shall be closed with small pieces of torn or broken sod if kept moist and approved by the Public Works Commission. After the sod is laid, **irrigate** thoroughly to allow water to penetrate a minimum six (6) inches into the soil below the sod. Sod shall not be placed when the atmospheric temperature is below 32oF.

Tamp and roll completed sod installation with a manual roller or approved equipment to eliminate minor irregularities and to form close contact with the soil bed immediately after placing and watering. The type of rolling and tamping equipment to be used shall be submitted to the Public Works Commission for approval prior to construction. On steep slopes 3:1 (horizontal and vertical) or greater, in drainage ditches or any areas where sod slipping may occur, anchor sod with approved wooden stakes (½"x ¾" x 12") or staples spaced not over two (2) feet apart in any direction and/or in sufficient number to prevent slippage or displacement. The anchors shall be driven flush with the surface of the sod. The wide flat side of the stake shall be driven parallel to the slope. Staking shall be done concurrently with sod placement and prior to tamping. Sod shall be laid with the long horizontal edge of the strips parallel to the contour starting at the bottom of the slope. The edge of the sod shall be turned slightly in the ground at the top of a slope and a layer of earth placed over it and compacted so as to conduct the surface water over and onto the top of the sod. Upon completion of the above described work, the surface of the sodded areas shall coincide with the finished grade and not exceed ¼" plus or minus variation to adjoining grade or proposed contour. Extreme care shall be taken to prevent the installed sod from being torn or displaced.

## **MAINTENANCE**

The Contractor shall, at no additional cost to the 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 ½ inch water for the first three (3) weeks after area sodded.
- After the three (3) week period, water twice a week with a ¾ inch of water each time unless a comparable amount of rainfall has occurred.
- Make weekly inspections to determine moisture content of soil and supplement the above watering schedule as needed.
- Excessive runoff puddling and wilting shall be prevented.

### **Fertilizer and Pest Control**

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

### **Mowing**

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

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

### **ACCEPTANCE**

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

Replacement of dead sod shall be performed within seven (7) days after notification by the Public Works Commission and the maintenance period for these areas or individual lawns shall be extended for the 90 day maintenance period. Failure to replace dead sod within the

specified seven (7) day period will result in the Public Works Commission having the work performed and deducting the cost from the Contract; however, the Contractor shall be responsible for the maintenance.

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

### **GUARANTEE**

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

## **02933 LAWNS AND GRASSES (SEEDING)**

### **GENERAL**

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

### **PREPARATION OF THE SOIL**

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

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

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

### **SEED MIXTURE AND SOWING THE SEED**

Seed shall be seed certified to be the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages of mixtures and

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

The following seed mixture shall be used:

**POUNDS OF SEED PER ACRE**

	<b>K-31 Fescue</b>	<b>Grain Rye</b>	<b>Common Bermuda</b>	<b>Centipede</b>
<b>April 15 - Sept. 1</b>	<b>75</b>	<b>-</b>	<b>60 (hulled)</b>	<b>5</b>
<b>Aug. 15 - Nov. 15</b>	<b>120</b>	<b>-</b>	<b>25 (hulled)</b>	<b>5</b>
<b>Nov. 1 - April 1</b>	<b>20</b>	<b>120</b>	<b>25 (un-hulled)</b>	<b>5</b>

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

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

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

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

**SPECIAL CONSIDERATIONS**

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

## **MAINTENANCE**

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

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

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

## **ACCEPTANCE**

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

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

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

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

### **GUARANTEE**

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

## **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:

Dates	Types	Rate
April 1 - July 15	<i>Warm Season Mix</i> 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	<i>Cool Season Mix</i> 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.

## **03301 CONCRETE CONSTRUCTION (UTILITY)**

### **GENERAL**

Concrete construction specified in this section shall be applicable to all "site work" and is not intended to cover general building specifications. The concrete work shall include all furnishing, hauling, fine grading and subgrade, form work, etc. and all incidentals necessary for completion of the work as it pertains.

### **MATERIALS**

#### **Concrete**

The Contractor shall furnish and place concrete in strict accordance with the requirements of ACI 318 (most recent edition). Ready-mixed concrete from an approved mixing plan shall be used throughout the work and conform to the requirements of ASTM C-94 for batch, mixing, and transporting. Concrete shall be in accordance with the following requirements:

##### A. Under Ground - Regular Weight Concrete

28-day compressive strength	3000 psi
Coarse aggregate	1 ½" max. size stone
Slump	2" minimum, 4" maximum
Air Entrainment	No requirement

##### B. Walls, Slabs, Sidewalks, Curb and Gutter - Regular Weight Concrete

28-day compressive strength	3000 psi
Coarse aggregate	¾" max. size stone
Slump	2" minimum, 4" maximum
Air Entrainment	5 more or less 1

The Contractor shall submit for approval mix designs, designed and tested by an approved testing laboratory, following the requirements of ACI 318 for each class of concrete to be used on this project. Mix designs in excess of one year old shall be verified. The Contractor will be responsible for all costs involved in the mix design. Material suppliers and material proportions incorporated in the mix design and certification shall not change without written permission from the Public Works Commission.

Admixtures used to produce entrained or air shall be sulfated hydrocarbons or neutralized vinsol resins conforming to ASTM C-260. Calcium chloride, other accelerators, or "anti-freeze" shall not be used without written approval by the Public Works Commission.

#### **Reinforcing Steel**

Reinforcing bars shall be new billet stock and shall conform to ASTM A-615, Grade 60. Bars shall be deformed to conform to ASTM A-305. The Contractor shall check and submit for

approval four (4) sets of shop and erection drawings prepared by the fabricator. Reinforcement detailing and placement shall conform to ACI 318. All reinforcing bars shall be tied in place according to approved erection drawings, using bar supports and accessories conforming to ACI 315. Laps or splices shall conform to ACI 318, and consist of the following minimum dimensions:

Tension Splices	36 Bar Diameters
Compression Splices	30 Bar Diameters

All reinforcing bars shall be tagged and stored in such manner as to be readily available at the time needed. Tag mark substitutions will not be made.

Welded wire mesh fabric reinforcing shall conform to the requirements of ASTM A-185. Lap splices shall be at least one full mesh plus 2" staggered to avoid continuous laps in either direction and securely wired or clipped.

### **GRADING**

The Contractor shall use every effort to observe any possible misalignments in line or grade of the installed forms and will call such to the attention of the Public Works Commission promptly. The Contractor is cautioned that he shall be responsible for any damage to utility lines caused by his negligence. The Public Works Commission or his representative shall then inspect the forms and if approved, pouring operations may begin. Where unstable material exists, the Contractor shall remove such material to a depth required to provide a stable subgrade at no additional cost to the Public Works Commission.

### **FORM WORK**

Metal forms shall be used throughout the work except for short, odd length sections and in accordance with ACI 301 and ACI 347 (most recent editions). Earth cuts may be used as forms for unexposed vertical surfaces on footings, provided the soil and workmanship allow an accurate and curable excavation. Forms shall be kept in good condition at all times. Any forms which have become out of shape or otherwise unsuitable shall be removed from the work. Forms shall be of such section and design that they will adequately support the concrete and any construction equipment used in the work. Form sections shall be provided with interlocking joints to insure that the forms are tightly jointed together free from movement. Forms shall be held in place by metal pins, not less than eighteen (18) inches in length, with fastenings of metal and wedges to insure a correct, rigid setting.

Forms shall be of the dimension required for the designed cross-section shown on the plans. Built up sections to attain the required depth will not be permitted.

Forms shall be set true to the lines and grades established by the Design Engineer or as indicated on the plans.

Forms shall be held rigidly in position and shall be of sufficient strength to resist springing out of line when concrete is placed.

### **PLACING CONCRETE**

Prior to placing concrete, the subgrade shall be moistened and the contact side of the forms shall be cleaned and coated with a heavy oil. The Contractor shall not place any concrete without the forms, reinforcing steel and subgrade being inspected and approved by the Design Engineer. Placing of concrete is to be in accordance with ACI 304 (most recent edition). Water shall be removed from the excavation before placing concrete and water shall be diverted to prevent washing over freshly deposited concrete.

Concrete shall be placed as not to disturb concrete already in place and in such a manner as to require the minimum amount of lateral movement. Concrete shall be deposited in the forms without segregation. A tremie shall be used when the fall exceeds five (5) feet. Care shall be taken not to upset any forms during the concrete pouring operations. Any concrete showing misalignment due to form movement shall be removed and replaced at no additional cost to the Public Works Commission.

All concrete shall be consolidated in accordance with ACI 309 (most recent edition). Mechanical vibrators shall be operated by experienced workmen. Spading and rodding may be required to supplement mechanical vibration. Consolidation shall be adequate to remove any voids and after removal of the forms, no honeycomb shall be present. Should any honeycomb be present, the Design Engineer shall determine if the honeycomb is of a minor nature, the voids may be filled with mortar as approved by the Design Engineer.

All concrete within forms shall be brought to true section by the use of an approved straight edge and shall be tamped with straight edge to bring mortar to the surface, after which it shall be floated smooth by means of wood floats. No steel floats will be permitted. After true surface of section has been obtained, and after initial set has taken place, the entire surface shall be brushed with a dampened brush. All joints and all exposed edges shall be rounded off with approved jointing and edging tools. The type of finish required will be specified in the specific item of work specified or indicated on the drawings. All exposed surfaces of retaining walls, structures, etc. shall be given a Class 2 finish with ¼ inch chamfered edges.

No more concrete shall be laid than can be properly finished and covered during the daylight, unless adequate artificial light satisfactory to the Design Engineer is provided.

Immediately after finishing operations have been completed, the entire surface of the concrete shall be sprayed with an approved curing compound. The use of liquid retarding agents shall conform to standards specified by current AASHTO or ASTM Specifications.

Cold weather concreting shall be in accordance with ACI 306 (most recent edition) and hot weather concreting shall be in accordance with ACI 305 (most recent edition). Concreting shall be done when weather conditions are favorable unless otherwise directed by the Design

Engineer. Concrete operations shall be discontinued when the temperature of 40 degrees Fahrenheit is reached on a falling thermometer. No concreting shall be attempted when local weather bureaus indicate temperatures below freezing within the ensuing 24 hours unless proper precautions are made to protect concrete by covering with straw or other thermal insulation satisfactory to the Design Engineer. The Contractor shall be responsible for the quality and strength of the concrete laid during cold weather or hot weather and any concrete damaged by frost action or freezing shall be removed and replaced as directed by the Design Engineer and/or the Public Works Commission at the Contractor's expense.

Forms shall not be removed from the concrete for a minimum of 7 days, unless approved by the Design Engineer. The Contractor shall apply a curing compound or provide measures to maintain moisture for proper curing at his expense, if early form removal is approved. Immediately after the forms have been removed, all honeycomb areas shall be repaired (with one part cement and two parts sand) and earth backfill material shall be placed adjacent to the finished concrete and smoothed off to prevent an accumulation of standing water, subgrade saturation or under wash in the event of rain.

Both pedestrian and vehicle traffic shall be excluded from crossing the concrete for a period of 14 days by the erection and maintenance of suitable barricades. Contractor shall be responsible for any damage resulting from traffic within the 14 day period and he shall remove and replace any concrete damaged as directed by the Design Engineer and/or Public Works Commission.

### **MASONRY MATERIALS**

Brick shall be in accordance with ASTM C-32 Grade MS laid in full beds of mortar with shove joints.

Concrete masonry blocks shall be in accordance with ASTM C-139. Blocks shall be at least 5", but not more than 8" in thickness nor less than 8" in length and of such shape that the joints can be effectively sealed and bonded with cement mortar.

Cement mortar for brick work shall be in accordance with ASTM C-270, Type M. Use Type IIA cement in accordance with ASTM C-150.

### **TESTING**

The requirements of ACI318 (most recent edition) shall be used to control the evaluation of all concrete strengths. The strength is to be checked during construction by four (4) cylinders at the option and cost of the Public Works Commission, of which 1 shall be broken at 7 days, 2 at 28 days. If the specified strength is not achieved in 28 days, 1 reserved shall be stored and broken as specified by the Design Engineer. Cylinders shall be made and stored in accordance with ASTM C-13. Cylinders shall be for each day concrete is poured in excess of 10 cubic yards of each different type of concrete, as determined by the Design Engineer. All additional expenses

required because of the failure of the materials to meet routine testing requirements, or poorly scheduled concrete deliveries, shall be borne by the Contractor.

## **SECTION 05500**

### **METAL FABRICATIONS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Miscellaneous items fabricated from steel.

##### **1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

##### **1.4 ACTION SUBMITTALS**

- A. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Miscellaneous steel items.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
  1. Certify that welders have been qualified under AWS, within previous 12 months, to perform welds required under this Section.

## 1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

## 1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

## PART 2 - PRODUCTS

### 2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Wide Flange Shapes: ASTM A992.
- C. Steel Other Shapes, Plates, Shapes, and Bars: ASTM A36/A36M.
- D. Stainless steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 316.
- E. Stainless steel Bars and Shapes: ASTM A276, Type 316.
- F. Steel Tubing: ASTM A500/A500M, Grade B cold-formed steel tubing.

- G. Steel Pipe: ASTM A53/A53M, Type S Grade B Standard Weight (Schedule 40) unless otherwise indicated.
- H. Carbon Steel Bolts and Studs: ASTM A307, Grade A (hot dip galvanized nuts and washers where noted)
- I. High Strength Steel Bolts, Nuts and washers: ASTM F3125, Grade A325 (mechanically galvanized per ASTM B695, Class 50, where noted).
  - 1. Elevated Temperature Exposure: Type I.
  - 2. General Application: Type I or Type II.
- J. Galvanizing: ASTM A123, Zn w/0.05 percent minimum Ni.
- K. Galvanizing, hardware: ASTM A153, Zn w/0.05 percent minimum Ni.
- L. Galvanizing, anchor bolts: ASTM F2329, Zn w/0.05 percent minimum Ni.
- M. Welding electrodes, steel: AWS A5.1 E70xx.

## 2.2 **FASTENERS**

- A. Unless otherwise noted, provide steel machine bolts for the connection of carbon steel or iron; galvanized steel or stainless-steel machine bolts for the connection of galvanized steel or iron; and stainless steel machine bolts for the connection of aluminum or stainless-steel.
- B. General: Unless otherwise indicated, provide Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless steel fasteners for fastening aluminum.
  - 2. Provide stainless steel fasteners for fastening stainless steel.
- C. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- D. Mechanically Galvanized Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM F3125, Grade A325, Type 3; with hex nuts, ASTM A563, Grade C3; and, where indicated, flat washers.
- E. Stainless steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where

indicated, flat washers; Alloy Group 2.

- F. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
  - 1. Provide standard headed bolts with heavy hex nuts and Grade A washers.
  - 2. Where galvanized anchor bolts are indicated or specified, provide standard headed bolts with heavy hex nuts and Grade A washers, galvanize in accordance with ASTM F2329.
- G. Machine bolts and nuts conforming to Federal Specification FF-B-575C. Bolts and nuts shall be hexagon type. Bolts, nuts, screws, washers and related appurtenances shall be Type 316 stainless steel.
- H. Toggle Bolts: shall be Hilti, Toggler Bolt or equal.

### 2.3 MISCELLANEOUS STEEL

- A. Miscellaneous Steel Work: Formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Drill or punch holes. Smooth edges without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.
- B. Connections and Accessories: Sufficient strength to safely withstand the stresses and strains to which they will be subjected. Close fitting exposed joints and jointed where least conspicuous. Conceal thread on threaded connections where practical. Provide continuous welds or intermittent welds on welded connections as specified or shown. Dress face of welds flush and smooth. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.
- C. Miscellaneous Steel Items: Beams, angles, plates detailed on the Drawings, support brackets, base plates for other than structural steel or equipment, and any other miscellaneous steel indicated and not otherwise specified.
- D. Structural steel angle: Galvanized. Fabricated with not less than three anchors on each jamb.
- E. Galvanizing, where required: Use hot-dip zinc process after fabrication, coating not less than 2 oz/sq.ft. of surface.

## 2.4 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: High-zinc-dust-content paint complying with ASTM A780 and compatible with paints specified to be used over it.

## 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

## 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Galvanize miscellaneous framing and supports where indicated.

## 2.7 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
  - 1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
- C. Galvanize miscellaneous steel trim.

## 2.8 FINISHES, GENERAL

- A. Finish metal fabrications after assembly.
- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

## 2.9 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products. Limit maximum nickel (Ni) content of galvanizing zinc to 0.05%.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Install all items except those to be embedded in concrete or other masonry which shall be installed under Division 03 and Division 04 respectively. Install items to be attached to concrete or masonry after such work is completed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted.
1. Touch up abrasions in the shop primer immediately after erection. Paint areas left unprimed for welding after welding.
  2. Clean and repair, after installation, zinc coating which has been burned by welding, abraded, or otherwise damaged. Thoroughly clean damaged area and remove all traces of welding flux and loose or cracked zinc coating prior to painting. Paint the cleaned area per the requirements of ASTM A780.
  3. Install specialty products in accordance with the manufacturer's recommendations.
  4. Weld headed anchor studs in accordance with manufacturer's recommendations.
  5. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
  6. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
  7. Field Welding: Comply with the following requirements:
  8. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  9. Obtain fusion without undercut or overlap.
  10. Remove welding flux immediately.
  11. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
  12. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

13. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
14. Corrosion Protection: Coat concealed surfaces of aluminum and steel that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
  - a. Aluminum Contacting a Dissimilar Metal: Apply a heavy brush coat of zinc- chromate primer followed by two coats of aluminum metal and masonry paint to the dissimilar metal.

### 3.2 **INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS**

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

### 3.3 **INSTALLING BEARING AND LEVELING PLATES**

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

### 3.4 **ADJUSTING AND CLEANING**

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

## **09801 ANTI-MICROBIAL ADMIXTURE**

### **GENERAL**

All reinforced concrete precast manholes shall include a liquid anti-microbial admixture to render the concrete uninhabitable for bacterial growth. The admixture shall be included in the fabrication of the manhole by an approved concrete precast manhole manufacturer. Coatings applied to the interior walls of the manhole shall not be acceptable.

Further, all field mixed mortar, utilized in concrete precast manholes, shall include the anti-microbial admixture. The intent and purpose of this specification is to render all concrete and/or mortar within sanitary sewer service uninhabitable for bacterial growth. Any defects shall be cause for the replacement and correction of such defect as directed by the Fayetteville Public Works Commission (PWC), at no expense to the Fayetteville Public Works Commission.

### **RELATED SECTIONS**

- A. 02730 – Sanitary Sewer Systems
- B. 02732 – Sewage Force Mains

### **REFERENCES**

- A. ASTM C478 – Standard Specification for Precast Reinforced Concrete Manhole Sections
- B. ASTM C1443 – Standard Specification for Precast Reinforced Concrete Pipe
- C. ASTM C1577 – Standard Specification for Precast Reinforced Concrete Pipe

### **SUBMITTALS**

All submittals shall be provided in accordance with the Contract Documents, and the requirements outlined herein. The Contractor shall submit, in accordance with the Contract Documents, product data, certifications, and product data, to include the following:

1. U.S. Environmental Protection Agency (EPA) registration number.
2. Documentation that the product has a minimum of 10 years of successful prevention of microbial induced corrosion in sanitary sewers.
3. Documentation that the precast facility is certified by the anti-microbial manufacturer.
4. Documentation from the precast facility stating that the correct amount and correct mixing procedure was followed for all anti-microbial concrete.

### **QUALITY ASSURANCE**

A color identifier shall be applied to the interior of each concrete piece fabricated with the anti-microbial admixture. Each piece shall also be plainly stenciled with the name of the anti-microbial admixture on the exterior of each piece.

## **MATERIALS**

All manholes shall conform to PWC standard specifications and details, unless otherwise approved in writing by the Fayetteville Public Works Commission. All concrete and mortar utilized in the construction of the manholes shall contain an anti-microbial admixture.

### **Anti-Microbial Admixture:**

The liquid anti-microbial admixture shall be used in accordance with the manufacturer's recommendations. The amount of the admixture shall be included in the total water content of the concrete or mortar mix design. The admixture shall be added to the concrete or mortar mix water, to ensure even distribution of the admixture throughout the concrete or mortar mix. When properly prepared, the anti-microbial admixture shall render the concrete or mortar uninhabitable for bacterial growth.

The anti-microbial admixture shall be ConShield, ConBlock, or approved equal. The ConShield liquid anti-microbial admixture can be obtained from ConShield Technologies, Inc. or an approved precast facility. The ConBlock liquid anti-microbial admixture can be obtained from ConSeal Concrete Sealants, Inc., or an approved precast facility.

### **Field Repairs:**

Field repairs to the precast concrete or mortar shall be in accordance with the admixture manufacturer's recommendations. All field repairs shall be completed in accordance with PWC requirements.

## **ACCEPTANCE**

Acceptance of the concrete and mortar with the anti-microbial admixture shall be based on conformance with the requirements herein, the Fayetteville Public Works Commission's review of the installed manhole, and results of all testing.

## **09802 SPECIAL COATINGS - CERAMIC EPOXY (PROTECTO401)**

### **GENERAL**

The interior surfaces of all ductile iron pipe and fittings shall be full coated with a ceramic epoxy lining. 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.

### **MATERIALS**

The lining material shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quarts pigment.

The epoxy material shall meet the following minimum performance requirements:

Permeability Rating: 0.00 perms when tested according to ASTM E-96 Procedure A with a test duration of 30 days.

ASTM 6-95 Cathodic Disbandment: 1.5 volts at 77° F.

ASTM B-117 Salt Spray: 0.00 undercutting after one year.

<u>Immersion Testing ASTM D-714</u>	<u>Duration</u>
20% Sulfuric Acid	1 Year
25% Sodium Hydroxide at 140° F	1 Year
160° F Distilled Water	1 Year
120° F Tap Water	1 Year

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, certified by the Supplier.

### **APPLICATION OF LININGS**

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 lining shall be applied by a competent firm with a five 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 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.

Markings: Each joint, manhole unit, or pipe bend special 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 damage which does occur shall be repaired prior to the installation of the pipe in accordance with the manufacturer's recommendations, so the repaired area is equal to the undamaged lining in all respects.

## **09802 SPECIAL COATINGS - CERAMIC EPOXY (PROTECTO401)**

### **GENERAL**

The interior surfaces of all ductile iron pipe and fittings shall be full coated with a ceramic epoxy lining. 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.

### **MATERIALS**

The lining material shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quarts pigment.

The epoxy material shall meet the following minimum performance requirements:

Permeability Rating: 0.00 perms when tested according to ASTM E-96 Procedure A with a test duration of 30 days.

ASTM 6-95 Cathodic Disbandment: 1.5 volts at 77° F.

ASTM B-117 Salt Spray: 0.00 undercutting after one year.

<u>Immersion Testing ASTM D-714</u>	<u>Duration</u>
20% Sulfuric Acid	1 Year
25% Sodium Hydroxide at 140° F	1 Year
160° F Distilled Water	1 Year
120° F Tap Water	1 Year

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, certified by the Supplier.

### **APPLICATION OF LININGS**

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 lining shall be applied by a competent firm with a five 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 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.

Markings: Each joint, manhole unit, or pipe bend special 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 damage which does occur shall be repaired prior to the installation of the pipe in accordance with the manufacturer's recommendations, so the repaired area is equal to the undamaged lining in all respects.

## **09804 SPECIAL COATINGS – EPOXY LINING (PERMOX OR TNEMEC)**

### **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 for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
- K. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- L. ASTM D 4060 – Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- M. ASTM D 4400 – Standard Test Method for Sag Resistance of Paints Using a Multinotch Applicator
- N. ASTM D 4541 – Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- O. ASTM G 8 – Standard Test Methods for Cathodic Disbonding of Pipeline Coatings

- P. ASTM G 95 – Standard Test Method for Cathodic Disbondment Test of Pipeline Coatings
- Q. ASTM G154 – Standard Practice for Operating Fluorescent Ultraviolet Lamp Apparatus for Exposure of Nonmetallic Materials

Unless otherwise specified, references to documents shall mean the documents in effect at the time of bid. If the referenced document(s) have been discontinued by the issuing organization, references to those documents shall mean the replacement documents or the last version of the document before it was discontinued.

Where conflicts exist between the standards and this specification, the more stringent shall apply.

## **MATERIALS**

**All ductile iron pipe and fittings shall be in accordance with the Public Works Commission standard specification 02730 – Sanitary Sewer Systems, 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., Permax-CTF as manufactured by Permite Corporation, or approved equal.

The ceramic epoxy lining system shall meet the following minimum performance requirements:

- A. Abrasion (ASTM D 4060, CS-17 wheel, 1,000 grams) – 76 mg loss
- B. Adhesion (ASTM D 4541) – not less than 1,860 psi
- C. Severe Wastewater Analysis Test (150oF, 500 ppm H<sub>2</sub>S, 4,000 ppm NaCl, 10% sulfuric acid, EIS Permeation Analysis) – Initial impedance of 11.2 (log-z). No blistering, cracking, checking, or loss of adhesion. Reduction in electrical impedance of 0.5 after 28 days of exposure.
- D. Cathodic Disbondment (ASTM G 8, 1.5 V, Classification Group A) – no more than 0.000 inch disbonded equivalent circle diameter.
- E. Dielectric Strength (ASTM D 149) – greater than 600 V per mil
- F. Hardness (ASTM D 2240) – Shore D hardness of 79
- G. Impact (ASTM D2794) – No visible cracking or delamination after 160 inch-pounds direct impact.

H. Chemical resistance by immersion testing, in accordance with ASTM D 714, as outlined in the following table:

20% Sulfuric Acid at 77° F	2 years, no effect
25% Sodium Hydroxide at 140° F	2 years, no effect
5% Sodium Chloride at 77° F	2 years, no effect
Distilled Water at 160° F	2 years, no effect

- I. Salt Spray (ASTM B 117) – No blistering, cracking, rusting, or delamination of film. No rust creepage at scribe after 1,000 hours.
- J. Sag Resistance (ASTM D 4400) – Not less than 90 mills wet film thickness.
- K. Water Absorption (ASTM C 413) – 0.0 percent water absorption
- L. Water Vapor Transmission (ASTM D 1653, Method B, Wet Cup, Condition C) – 1.25 g/m<sup>2</sup> 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.

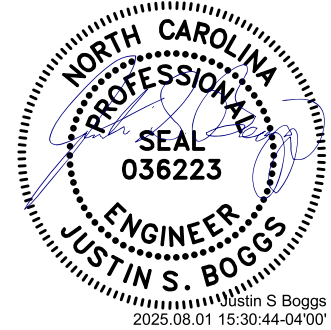
Pipe Installation: All pipe and fittings shall be installed in accordance with PWC standard specifications 02222 – Excavation, Trenching, and Backfilling for Utility Systems, 02730 – Sanitary Sewer Systems, 02732 – Sewage Force Mains, and these Contract Documents.

DOCUMENT 000107 - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

A. Structural Engineer:

1. Justin S. Boggs.
2. License #036223.
3. Responsible for Section 02350 Steel H-Piles and Section 05500 Metal Fabrications.



END OF DOCUMENT 000107

## SECTION 02350 - STEEL H-PILES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes steel H-piles.

#### 1.3 UNIT PRICES

- A. Contract Sum: Base Contract Sum on number and dimensions of piles indicated from tip to cutoff, plus not less than 12 inches of overlength for cutting piles at cutoff elevations.
- B. Work of this Section is affected as follows:
  - 1. Additional payment for pile lengths in excess of that indicated, and credit for pile lengths less than that indicated, is calculated at unit prices stated in the Contract, based on net addition or deduction to total pile length as determined by The Engineer and measured to nearest 12 inches.
  - 2. Additional payment for number of piles in excess of that indicated, and credit for number of piles less than that indicated, is calculated at unit prices stated in the Contract.
  - 3. Unit prices include labor, materials, tools, equipment, and incidentals for furnishing, driving, splicing, cutting off, capping, and disposing of cutoffs.
  - 4. No payment is made for rejected piles, including piles driven out of tolerance, defective piles, or piles damaged during handling or driving.

#### 1.4 DEFINITIONS

- A. Practical Refusal: Practical refusal is count of hammer blows that exceed 20 blows per inch with the hammer operating at a determined setting and results in no more than 1/4 inch of pile rebound per blow.
- B. Pile Heave: Pile heave is upward movement of a pile from its originally driven elevation.
- C. Redriving: Redriving occurs when a pile which has been previously driven to required design elevation, required driving criteria, or to practical refusal and is re-driven with same methods, materials, and driving equipment used for test piles and production piles.
  - 1. Perform redriving when required to reset piles that have heaved, to advance piles that encountered high driving resistance due to excess pore water pressures, to advance piles

that encountered low driving resistance and require pile set up, or for other reasons as determined by The Engineer.

- D. Professional Engineer: Registered Professional Engineer meeting project qualifications and who is hired by Contractor.
- E. The Engineer: The Engineer or designated representative hired by Owner.
  - 1. Approvals given by The Engineer shall not relieve Contractor of its responsibilities for performing the work in accordance with Contract Document requirements.

#### 1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site prior to moving equipment onto the site.
- B. Discuss following as a minimum:
  - 1. Work scope, schedule, and sequence.
  - 2. Driving procedures.
  - 3. Acceptance criteria.

#### 1.6 ACTION SUBMITTALS

- A. Submit for review and acceptance in accordance with Section 01330 “Submittal Procedures,” product data and shop drawings showing materials of construction, installation equipment, and details of installation.
- B. Product Data: For each type of product.
- C. Shop Drawings: Show fabrication and installation details for piles, including size of steel sections, lengths, and details of pile accessories.
  - 1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
  - 2. Details of top connection to structure, splice locations, and pile tip reinforcement or points where applicable.
  - 3. Include details of equipment assemblies and proposed templates. Indicate dimensions, weights, loads, and required clearances. Include:
    - a. Crane, leads, hammer make and model, cap block, pile helmet, cushion block dimensions and material type, and anvil.
    - b. Ram mass, anvil mass, rated stroke, rated energy range, rated speed, steam or air pressure, pile driving cap, make and mass, and other applicable data. Equipment is subject to satisfactory field performance.
    - c. Describe pile slings, chokers, and other apparatus or mechanisms used to support piles prior to and during driving.
    - d. Pile splice locations and details of proprietary splices to be used.
    - e. Details and drawings of proposed templates.

4. Submit results of preliminary wave equation analysis for pile type and proposed pile driving system.
  - a. Submit documentation to support the selection of soil damping and quake values used in the wave equation analysis.
  - b. Submit preliminary corresponding driving stresses and overall installation procedures. Include installation procedures to limit driving stresses to mitigate pile damage.
  - c. Perform sufficient analysis to address variability in anticipated pile lengths and pile splices.
  - d. Perform, seal, and sign, wave equation analysis by a Professional Engineer.
  - e. Submit a revised wave equation analysis whenever there is a change in pile type, pile installation equipment, or as requested by The Engineer.
5. Submit final pile driving acceptance criteria based on the proposed pile driving system.
6. Submit a plan showing location of each pile, identification number, driving sequence, and a summary table to show coordinates, pile length, and cutoff and tip elevations.
7. Where applicable, submit a description of the proposed pre-augering or pre-drilling methods, depths, and equipment including auger type and size.
8. Submit shop drawings and structural design calculation and analysis data sealed and signed by qualified Professional Engineer responsible for their preparation who is registered in the State of project work site.

- D. Work Requiring a Submittal: Do not start fabrication or installed materials prior to approval of such item. Fabrication performed, materials purchased, or on-site construction accomplished which does not conform to approved shop drawings and data shall be at Contractor's risk. Remove non-compliant materials and replace with approved materials. Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

## 1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, qualified Professional Engineer, surveyor, and welder.

B. Certificates:

1. Mill Certificates: Show chemical composition and physical properties, including yield strength, of steel to be furnished.
2. Welder's Certificates: Date within one year of submittal, attesting welders are certified and qualified for type and nature of welding to be performed.
3. Manufacturer's Certificates: Submit data for pile splices, installation instructions, and other relevant data.

C. Reports:

1. Mill Test Reports: For steel H-piles, steel castings, and steel plate, signed by manufacturer.
2. Pile-Driving Records: Submit within three days of driving each pile.

D. Certified Piles Survey:

1. Within three working days after a driven pile is deemed to be permanently obstructed or when an installed pile is observed to exceed specified tolerances, submit a sketch to The Engineer showing as-driven locations of driven piles immediately adjacent to the pile and established building lines as indicated on Drawings.
  2. Submit within two weeks of completing all pile driving, a plan showing designation number of each pile and its as-driven location with respect to specified tolerances and established building lines as indicated on Drawings, including final as-installed pile tip and pile cutoff elevations.
- E. Preconstruction Photographs: Photographs or video of existing conditions of adjacent construction.

## 1.8 QUALITY ASSURANCE

### A. Pile Installer Qualification:

1. Pile driving company experienced in type of specified piling work and having at least five years' experience and at least five successful installations of same general type and class of piles.
2. Superintendent: Have at least five years' experience in pile driving and operations of pile type, size, length, and ground conditions similar to project requirements.
3. Use available data to plan and execute the work, including geotechnical report, Contract Documents and other pile driving records or summaries of piles driven on nearby projects, and pile driving behavior.

B. Surveyor Qualifications: Professional Land Surveyor hired by Contractor and registered in the State in which the work is performed and having not less than 5 years' experience performing surveys on similar projects.

C. Professional Engineer Qualifications: Engineer hired by Contractor and registered in the State in which the work is performed and having not less than 5 years' experience in pile design on similar projects.

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

## 1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver piles to Project site in such quantities and at such times to ensure continuity of installation. Develop and submit plans for delivery, storage, and handling of piles for review and approval to The Engineer. Handle and store piles at Project site to prevent buckling or physical damage.

B. Do not dump piles. Store piles to prevent low spots where water can accumulate. Keep stored piles clean. Stack piles during delivery and storage:

1. So that each pile is maintained in a straight position and is supported every 10 feet or less along its length, including ends, to prevent exceeding maximum camber or sweep.
2. Not more than 5 feet high.

- C. Lift piles using a cradle or multiple point pick-up system to ensure that maximum permissible camber or sweep is not exceeded due to insufficient support. Inspect piles for excessive camber, sweep, and damage before transporting them from storage area to driving area and immediately prior to placement in the driving leads.
  - 1. Maximum Permissible Camber or Sweep: 2 inches over pile length.
  - 2. Reject piles having excessive camber or sweep.
- D. Handle in such a way as to minimize bending stresses. Brace piles in plumb and rigid leads to prevent whipping during driving.

#### 1.10 FIELD CONDITIONS

- A. Project Information: Geotechnical data has been prepared for this Project and is available for information only. Owner is not responsible for interpretations or conclusions drawn from this data.
- B. Vibration Limit Criteria: Limit pile installation operations to prevent damage to adjacent buildings, structures, utilities, pipes, or other features near the site. Be solely responsible to determine the maximum vibration at each facility; however, in no case shall the following be exceeded:
  - 1. Do not exceed peak particle velocity (PPV) limits at the ground surface at existing residences, structures, utilities, and existing water mains:

Peak Particle Velocity (inch per sec.)	Maximum Frequency (Hz)
Over 40	2.0
30 to 40	1.5
20 to 30	1.0
Less than 20	0.5

- C. Vibration Monitoring:
  - 1. Monitor peak particle velocities using a minimum of one seismographs operated by personnel trained in their use during pile driving. Seismograph location shall be mutually agreed upon by The Engineer and Contractor.
  - 2. The Engineer may direct that additional vibration monitoring be performed if conditions warrant such action.
  - 3. Perform vibration monitoring on a continuous basis throughout pile driving operations.
- D. Be completely responsible for damages resulting from pile driving operations and at a minimum take whatever measures as necessary to maintain peak particle velocities within specified limits.
- E. The noise level due to piling at any residential zones shall be less than 75 decibels (dBA), or less than that imposed by local Authority Having Jurisdiction, whichever is stricter.

#### 1.11 LINES AND GRADES

- A. Employ a Professional Land Surveyor to establish lines and levels. Be responsible for correct location, orientation of piles, and keeping a record of piles driven, as well as a record of amount of uplift or settlement of individual piles. Give daily records of uplift or settlement measurements to The Engineer.
- B. Establish a baseline and datum elevation as approved by The Engineer. Stake and maintain pile locations and establish required elevations, including elevation of top of pile prior to cutting off any length of pile.
- C. Within one working day, provide The Engineer with a written tabulation indicating the following information for each pile:
  - 1. Pile number.
  - 2. Elevation of top of pile prior to cutting or build up, measured to nearest 0.10 feet.
  - 3. Elevation of top of pile after cutting or build up, measured to nearest 0.10 feet.
  - 4. Deviation from plan location at cut-off grade, measured to nearest 0.01 feet.

#### 1.12 OBSERVATION AND INSPECTION

- A. Perform pile driving installations under full-time observation of the The Engineer. Notify The Engineer at least 48 hours in advance of starting or restarting any pile driving work. Do not proceed with pile driving operations unless The Engineer is present; piles not observed by The Engineer will not be accepted.
- B. Give The Engineer safe access to the work at all times. Furnish The Engineer with materials and facilities for checking conformance with Contract Document requirements.
- C. Provide legible markings on each pile in one-foot increments, starting at the tip, and using enlarged numerals to indicate pile length at 5 feet intervals. Maintain readable markings slinging, handling, and driving. Orient piles in the leads so markings are visible from a safe location during driving.
- D. Have available and provide to The Engineer two saximeters in good working condition for use during pile driving operations.
- E. Install piles in the presence of the The Engineer. Piles not installed in The Engineer's presence will not be accepted.
- F. The Engineer will maintain a record copy of each pile driven. Records will:
  - 1. Include pile designation number, driving resistance record, pile length as driven, date and time of driving, time delays during driving, tip and cut off elevations, deviations from drawing location and from plumb or batter, hammer data and other applicable data.
  - 2. Show unusual events during installation including interruptions during driving, obstructions, re-driving, and other relevant conditions.
  - 3. Show driving resistance record including number of blows per foot for each foot of driven length and number of blows per inch for final 6 inches of penetration.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers - Pile Accessories: Subject to compliance with requirements, provide products by one of the following or equal:
1. Associated Pile and Fittings Corporation.
  2. L.B. Foster Piling.
  3. Titus Steel
  4. Versa Steel, Inc.

### 2.2 MATERIALS - STEEL H-PILES

- A. High-Strength, Low-Alloy, Columbium-Vanadium Structural Steel: ASTM A572/A572M, Grade 50.
- B. High-Strength, Low-Alloy, Nickel, Copper, Phosphorous Steel H-piles: ASTM A690/A690M.
- C. High-Strength, Low-Alloy, Structural Steel: ASTM A588/A588M.
- D. Keep deformations, defects, camber, and sweep of piles placed in the leads within those values allowed in ASTM A6.
- E. Bearing Collars, End Plates, and Splicers: Use same material as steel piles.

### 2.3 MATERIALS - PILE ACCESSORIES

- A. Driving Points: Manufacturer's standard one-piece driving point, fabricated from steel castings as follows to provide full bearing of web and flange of pile tip:
1. Carbon-Steel Castings: ASTM A27/A27M, Grade 65-35, heat treated.
  2. High-Strength Steel Castings: ASTM A148/A148M, Grade 80-40.
- B. Reinforced Pile Tips: Cast steel tips,
1. Basis-of-Design: HP-77750 by Associated Pile & Fittings Corporation, or equal.
- C. Splice Unit: Manufacturer's standard splice unit, fabricated from two connected steel plates, of same material as steel H pile or material of equal strength, shaped to encase web and part of each flange.
1. Basis-of-Design: Champion Splicer HP-30000 by Associated Pile & Fittings Corporation, or equal.

### 2.4 DRIVING EQUIPMENT

- A. Pile Hammer: Single or double acting, air-, steam-, hydraulic-, or diesel-powered type capable of consistently delivering adequate peak-force duration and magnitude to develop the ultimate capacity required for type and size of pile driven and character of subsurface material anticipated at a blow count that does not cause damage to the pile. Do not use drop hammers.
  - 1. Keep hammer in good mechanical condition.
  - 2. Operate hammer at speed and pressure recommended by manufacturer
  - 3. When making final driving resistance, have hammer operating at energy required by approved submittals. Maintain fuel setting, boiler or air pressure recommended by manufacturer and employ the proper size hose and connections.
- B. At The Engineer's discretion, a vibratory hammer of sufficient capacity (force and amplitude) may be used to drive steel bearing piles to a depth that will allow access to an impact hammer or to stand the pile. The Engineer will determine the depth to which the piles may be installed using a vibratory hammer; however, use an impact hammer to drive all bearing piles for at least the final 3 feet of penetration.
- C. Closed-End or Double-Acting Diesel Hammers: Equip with a bounce-chamber pressure gauge in good working order or other similar approved apparatus to measure gas chamber pressure inside the hammer and total hammer energy. Mount gauge near ground surface so it can be easily read.
- D. Open-Ended or Single-Acting Diesel Hammers: Equip with a scale, jump stick, that extends above the ram cylinder that allows one to visually determine the hammer stroke at all times. Make access of the jump stick available to The Engineer.
- E. Hammer Cushions and Driving Caps:
  - 1. Between hammer and top of pile, provide hammer cushion and steel driving cap as recommended by hammer manufacturer and as required to drive pile without damage.
  - 2. Combine driving helmet or cap and cushion block capable of protecting pile head, minimizing energy absorption and dissipation, and transmitting hammer energy uniformly and consistently during entire driving period.
  - 3. Fit driving helmet or cap loosely around pile top so pile may rotate slightly without binding within the driving head.
- F. Leads:
  - 1. During driving operations, firmly hold pile and hammer in proper alignment by fixed driving leads of sufficient length to prevent the use of a follower.
  - 2. Use leads adapted for driving of inclined piles to drive battered piles.
  - 3. Include intermediate supports for pile in the leads to reduce unbraced length of the pile during driving.
- G. Do not allow changes in the selected pile driving equipment after being approved, except as directed by The Engineer. No additional contract time shall be allowed for Contractor proposed changes to methods, materials, and equipment.
- H. Use driving equipment to drive production piles of same type and operated in same manner as used to drive test piles. Do not use driving equipment that damages piles.

- I. Pre-Augering Equipment: Capable of drilling to depths indicated on Contract Documents.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Site Conditions: Do not start pile-driving operations until earthwork has been complete.
- B. Prior to commencing with the Work in this Section, carefully inspect job site and verify that piles may be installed in accordance with the Contract Documents. Verify that site conditions will support pile driving equipment and that adequate space is available to safely lift and install piles.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 GENERAL

- A. Install piles so they bear in hard clay soil stratum. Redrive piles obstructed above the bearing soils after removing the obstruction or after being relocated as approved by The Engineer.
- B. Discrepancies:
  1. In the event of discrepancy, immediately notify The Engineer in writing.
  2. Do not proceed with construction in areas of discrepancy, until all such discrepancies have been fully resolved.
- C. When piles are located in an area where site grading is required, do not drive piles until grading work is complete. Correct changes in grade resulting from pile driving without additional compensation.
- D. Pile Tips: Equip piles with manufactured steel reinforcing tips.

### 3.3 PREDRILLING AND JETTING

- A. Predrilling for steel H-piles is not permitted unless approved by The Engineer. Have predrilling use, equipment, and methods approved by The Engineer prior to commencing predrilling operations.
- B. Predrill Diameter: No more than 2 inches larger than pile web depth. Backfill hole with sand after driving is complete.
- C. Predrilling Depth: As approved.
- D. Dispose of spoil materials resulting from predrilling on-site as directed by The Engineer.
- E. Jetting of H-Piles is not permitted.

- F. When authorized by The Engineer, use jetting to assist driving piles through strata that cannot be penetrated practicably by use of the hammer alone. After completing penetration of the strata requiring jetting, discontinue jetting and resume driving with the hammer alone. Seat jetted piles by driving not less than 5 feet after jetting has been stopped.
- G. Discontinue jetting when the pile tip is approximately 3 feet above the required pile tip elevation. Drive pile the final 3 feet of penetration.
- H. Spudding is not permitted.

### 3.4 DRIVING CRITERIA

- A. Final pile driving acceptance criteria will be approved by The Engineer based on the Contractor's submittal of proposed means and methods for the pile driving.
- B. Drive each pile to tip elevations indicated on Drawings.
- C. Drive each pile to approved final driving resistance.
- D. Drive each pile to minimum tip elevation shown on Drawings and satisfy final driving resistance.
- E. Express final driving resistance as number of blows required to provide the required bearing.
- F. When the determination of the final penetration resistance is being made, operate hammer at rated speed for steam or air hammers. Maintain boiler or air pressure recommended by manufacturer, employing proper size hoses and connections. Operate other hammer types to transmit specified energy to the pile.
- G. Do not drive piles beyond practical refusal.
- H. Perform pile re-drives at the discretion of The Engineer.
- I. The Engineer may waive or modify the requirements for final driving resistance based on pile driving conditions.

### 3.5 INSTALLATION

- A. Inspect piles when placed in the leads immediately before driving. Handle piles to protect pile coatings. Repair damage or defects in pile coatings as specified.
- B. Take care to avoid damage in placing the pile in the leads and during pile driving operations. Laterally support piles during driving, but do not restrain from rotation in the leads. Where pile or projecting reinforcement orientation is essential, take special care to maintain the orientation during driving.
- C. Once pile driving has begun, keep pile alignment and batter constant. Monitor pile alignment and batter during driving with an accurate level. Drive piles continuously and without interruption until either meeting required tip elevation and corresponding acceptance criteria or attaining practical refusal.

- D. Cutoff steel H-piles at the elevations shown on Drawings by an approved method. Use templates or other devices to ensure cut off will be true and level. Where cutoff is below existing ground or mudline elevation, complete excavation, sheeting, and dewatering before driving pile to cutoff elevation.
- E. Legally dispose offsite pile cutoff lengths less than 4 feet unless used to extend another pile. Where practical, use cutoff lengths greater than 4 feet to extend the length of another pile.

### 3.6 PILE HEAVE

- A. Survey tops/butts of piles immediately after driving and at completion of driving all piles within a pile cap.
- B. Re-drive piles that have heaved more than 1/2 inch above or below previous top/butt elevation. Re-drive piles that have heaved more than 1/2 inch above previous top elevation to original top elevation without additional compensation.

### 3.7 PILE SPLICES

- A. Splice sections of steel H-piles with the approved splice detail in accordance with Contract Documents. Use no more than one splice per pile in making up the estimated pile length. Do not locate pile splices used to make up the estimated pile length shall occur within 10 feet of pile tip or pile cutoff elevation.
- B. A pile that has not reached the required final driving resistance when the top has been driven to the cutoff elevation shall be spliced, as shown and approved, and driven to a sufficient depth to develop the required driving resistance.
- C. Secure lengths of piles to be spliced in proper alignment with no eccentricity or angle between them.
- D. Weld pile splices conforming to recommendations of splice manufacturer. Electroslag welding is not permitted.

### 3.8 PILE ACCEPTANCE

- A. Only piles meeting the requirements of this Article will be accepted for payment.
- B. Piles that are damaged below cut-off elevation during driving will be rejected.
- C. Piles indicating sudden or peculiar decrease in penetration resistance during driving will be assumed broken and will be rejected unless The Engineer's review of available data indicates that sudden decrease in driving resistance is due to natural, subsurface conditions, and continued acceptable driving behavior is observed.
- D. Upon comparing a pile's performance with that of other driven piles and based on knowledge of subsurface conditions, The Engineer will determine if pile has been damaged sufficiently to make it unacceptable. If this is the case, the pile will be rejected. If Contractor does not agree that a pile is incapable of performing satisfactorily, testing may be required.

- E. During driving, The Engineer will evaluate the piles for alignment, buckling, visible breakage, or other irregularities. Piles that fail to meet the requirements of Contract Documents or for any other justifiable reason are unacceptable will be considered defective and shall be rejected.
- F. Removal of piles driven in permanent work for convenience, for prosecution of the work, or for any other reason, except at the direction of The Engineer, shall be replaced with another pile. Where piles are withdrawn, backfill pile hole with clean granular fill. Perform work without additional compensation.
- G. Contractor will be compensated only for rejected piles that are driven within the specified tolerances and whose damage is not attributed to Contractor's error in the opinion of The Engineer.
- H. Cut off piles that are damaged, mis-located, or driven out of alignment and cannot be removed, at least 3 feet below planned cut off and abandoned. Drive additional piles as directed by The Engineer without additional compensation.
- I. Submit plans for correcting defective work to The Engineer for approval before performing corrections. Pay for all additional costs including engineering, concrete work, steel, forms required for pile caps, and other foundations because of having to drive additional piles to replace rejected piles attributable to Contractor's error.

### 3.9 OBSTRUCTIONS

- A. Remove obstructions encountered within 10 feet of ground surface which prevent pile advancement in accordance with the acceptance criteria and within tolerances without additional compensation. Clear obstruction by excavation, pre-augering, or other feasible means as approved by The Engineer and then re-drive pile in the original location without additional compensation.
- B. If obstructions are encountered below 10 feet from ground surface and piles cannot be advanced to proper bearing strata in accordance with acceptance criteria and within specified tolerances, resort to methods to install pile as required, including excavation, predrilling, or other feasible means as approved by The Engineer. If in the judgment of The Engineer, Contractor is unable to properly complete any pile by resorting to such methods, The Engineer may order an additional pile for which Contractor will be paid in accordance with Contract unit price.
- C. Take care when obstructions are removed by excavation so as not to eliminate lateral support of adjacent individual piles or structures. Backfill excavated areas prior to re-driving the pile.
- D. If in the opinion of The Engineer, a pile has been damaged by an obstruction during driving, abandon and drive a replacement pile with payment being made in accordance with Contract unit price.
- E. Cut off or pull and re-driven abandoned piles at the discretion of The Engineer. Payment for piles cut off and abandoned and for pile removal will be made as delineated in project specifications.

### 3.10 TOLERANCES

- A. Install piles in correct locations, orientations, and alignments, both laterally and longitudinally, and to vertical lines indicated. Prior to driving piles, The Engineer will provide a permanent base line for inspection of pile placement. Maintain base line during production pile installations.
- B. Maximum Tolerances:
  - 1. A final lateral deviation from planned horizontal location at cutoff elevation: 3 inches for vertical piles.
  - 2. A vertical deviation of not more than 1-1/2 inches above or more than 4 inches below indicated cutoff elevations.
  - 3. A variation of not more than 1/4 inches per foot of pile length from vertical.
- C. Manipulation of installed piles shall not be permitted.
- D. Where installed piles exceed the specified lateral deviation tolerances, The Engineer has the option to determine the total load on individual piles based on the survey information.
  - 1. If the load on any pile exceeds the specified load capacity, The Engineer will provide a design and corrections shall be made in accordance with the design without additional compensation.

### 3.11 FIELD QUALITY CONTROL

- A. Tests and Inspections:
  - 1. Weld Testing: In addition to visual inspection, test and inspect welds according to AWS D1.1/D1.1M and inspection procedures listed below, at testing agency's option. Correct deficiencies in Work that test reports and inspections indicate do not comply with the Contract Documents.
    - a. Liquid Penetrant Inspection: ASTM E165.
    - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
    - c. Radiographic Inspection: ASTM E94, minimum quality level "2-2T."
    - d. Ultrasonic Inspection: ASTM E164.
- B. Steel H-piles will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

### 3.12 DISPOSAL

- A. Remove withdrawn piles and cutoff sections of piles from site, and legally dispose of them off Owner's property.

END OF SECTION 02350

## SECTION 05500 - METAL FABRICATIONS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Miscellaneous items fabricated from steel.

#### 1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

#### 1.4 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
  - 1. Miscellaneous steel items.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
  - 1. Certify that welders have been qualified under AWS, within previous 12 months, to perform welds required under this Section.

#### 1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

## 1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

## PART 2 - PRODUCTS

### 2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Wide Flange Shapes: ASTM A992.
- C. Steel Other Shapes, Plates, Shapes, and Bars: ASTM A36/A36M.
- D. Stainless steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 316.
- E. Stainless steel Bars and Shapes: ASTM A276, Type 316.
- F. Steel Tubing: ASTM A500/A500M, Grade B cold-formed steel tubing.
- G. Steel Pipe: ASTM A53/A53M, Type S Grade B Standard Weight (Schedule 40) unless otherwise indicated.
- H. Carbon Steel Bolts and Studs: ASTM A307, Grade A (hot dip galvanized nuts and washers where noted)
- I. High Strength Steel Bolts, Nuts and washers: ASTM F3125, Grade A325 (mechanically galvanized per ASTM B695, Class 50, where noted).
  - 1. Elevated Temperature Exposure: Type I.
  - 2. General Application: Type I or Type II.
- J. Galvanizing: ASTM A123, Zn w/0.05 percent minimum Ni.
- K. Galvanizing, hardware: ASTM A153, Zn w/0.05 percent minimum Ni.
- L. Galvanizing, anchor bolts: ASTM F2329, Zn w/0.05 percent minimum Ni.
- M. Welding electrodes, steel: AWS A5.1 E70xx.

## 2.2 FASTENERS

- A. Unless otherwise noted, provide steel machine bolts for the connection of carbon steel or iron; galvanized steel or stainless-steel machine bolts for the connection of galvanized steel or iron; and stainless steel machine bolts for the connection of aluminum or stainless-steel.
- B. General: Unless otherwise indicated, provide Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless steel fasteners for fastening aluminum.
  - 2. Provide stainless steel fasteners for fastening stainless steel.
- C. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- D. Mechanically Galvanized Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM F3125, Grade A325, Type 3; with hex nuts, ASTM A563, Grade C3; and, where indicated, flat washers.
- E. Stainless steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 2.
- F. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
  - 1. Provide standard headed bolts with heavy hex nuts and Grade A washers.
  - 2. Where galvanized anchor bolts are indicated or specified, provide standard headed bolts with heavy hex nuts and Grade A washers, galvanize in accordance with ASTM F2329.
- G. Machine bolts and nuts conforming to Federal Specification FF-B-575C. Bolts and nuts shall be hexagon type. Bolts, nuts, screws, washers and related appurtenances shall be Type 316 stainless steel.
- H. Toggle Bolts: shall be Hilti, Toggler Bolt or equal.

## 2.3 MISCELLANEOUS STEEL

- A. Miscellaneous Steel Work: Formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Drill or punch holes. Smooth edges without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.
- B. Connections and Accessories: Sufficient strength to safely withstand the stresses and strains to which they will be subjected. Close fitting exposed joints and jointed where least conspicuous. Conceal thread on threaded connections where practical. Provide continuous welds or intermittent welds on welded connections as specified or shown. Dress face of welds flush and smooth. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.

- C. Miscellaneous Steel Items: Beams, angles, plates detailed on the Drawings, support brackets, base plates for other than structural steel or equipment, and any other miscellaneous steel indicated and not otherwise specified.
- D. Structural steel angle: Galvanized. Fabricated with not less than three anchors on each jamb.
- E. Galvanizing, where required: Use hot-dip zinc process after fabrication, coating not less than 2 oz/sq.ft. of surface.

## 2.4 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: High-zinc-dust-content paint complying with ASTM A780 and compatible with paints specified to be used over it.

## 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

## 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Galvanize miscellaneous framing and supports where indicated.

## 2.7 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
  1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
- C. Galvanize miscellaneous steel trim.

## 2.8 FINISHES, GENERAL

- A. Finish metal fabrications after assembly.
- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

## 2.9 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products. Limit maximum nickel (Ni) content of galvanizing zinc to 0.05%.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Install all items except those to be embedded in concrete or other masonry which shall be installed under Division 03 and Division 04 respectively. Install items to be attached to concrete or masonry after such work is completed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted.
1. Touch up abrasions in the shop primer immediately after erection. Paint areas left unprimed for welding after welding.
  2. Clean and repair, after installation, zinc coating which has been burned by welding, abraded, or otherwise damaged. Thoroughly clean damaged area and remove all traces of welding flux and loose or cracked zinc coating prior to painting. Paint the cleaned area per the requirements of ASTM A780.
  3. Install specialty products in accordance with the manufacturer's recommendations.
  4. Weld headed anchor studs in accordance with manufacturer's recommendations.
  5. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
  6. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
  7. Field Welding: Comply with the following requirements:
  8. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  9. Obtain fusion without undercut or overlap.
  10. Remove welding flux immediately.
  11. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
  12. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
  13. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
  14. Corrosion Protection: Coat concealed surfaces of aluminum and steel that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
    - a. Aluminum Contacting a Dissimilar Metal: Apply a heavy brush coat of zinc-chromate primer followed by two coats of aluminum metal and masonry paint to the dissimilar metal.

### 3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

### 3.3 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

### 3.4 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

END OF SECTION 05500