



**CONTRACT DOCUMENTS &  
TECHNICAL SPECIFICATIONS**

**PWC2526073**

**REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH  
CREEK WATER RECLAMATION FACILITY**

**ISSUED FOR BID**

**FEBRUARY 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  
REPLACE CLARIFIER #3 MECANISM AT THE ROCKFISH CREEK WATER RECLAMATION  
FACILITY**

**Cumberland County  
North Carolina**

Pursuant to N.C.G.S 143-129, sealed bids are solicited and will be received at Fayetteville Public Works Commission, Administration Building, Conference Room 107, 955 Old Wilmington Road, Fayetteville, NC 28301, until **2:00 p.m., EST Thursday April 2, 2026**, at which time they will be publicly opened and read.

The work for this project consists of providing all labor, materials, equipment, and incidentals necessary to demolish and replace the existing mechanism in Clarifier #3 at the Rockfish Creek Water Reclamation Facility, located at 2536 Tracy Hall Road, Fayetteville, North Carolina, and owned by the Fayetteville Public Works Commission. The project includes removal and proper disposal of existing equipment and associated components, installation of the new clarifier mechanism and appurtenances, surface preparation and restoration, and coordination of all work to maintain continuous plant operations. Bidders should refer to the attached Technical Specifications and the Drawings.

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 **NON-MANDATORY** pre-bid meeting will be held at **10:00 a.m., EST Thursday, March 12, 2026**, Conference Room 107, Fayetteville Public Works Commission, Administrative Building, 955 Old Wilmington Road, Fayetteville, NC 28301. Representatives of the Owner and Project Engineer will be available to answer questions. Any formal bid submitted by a Bidder that fails to attend this meeting will be considered an unresponsive bid.

Questions will be fielded at the pre-bid meeting and all prospective bidders are encouraged 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: REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK RECLAMATION FACILITY** 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 **Friday, February 27, 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)

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  
REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK WATER  
RECLAMATION FACILITY**

**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. 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, March 20, 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.

## **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. 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 responsive Bidder, PWC may consider, among other criteria, the Bidder's past performance conduct on other contracts, and other information provided by the Bidder as noted below.
4. In determining the lowest responsive Bidder, PWC will evaluate the Bidder's proposed Bid price and the completeness of the submitted bid in accordance with the requirements of the Contract Documents.
5. PWC may consider the operating costs, maintenance considerations, performance date, and guarantees of materials and equipment.
6. PWC may conduct such investigations as deemed necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, as well as other considerations, to include but not limited to resources available to the Bidder to perform the work effectively, proposed Subcontractors and other persons and organizations to do the work in accordance with the Contract Documents to PWC's satisfaction within the prescribed time.
7. PWC reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to PWC's satisfaction.
8. If the Contract is to be awarded, PWC will give the Successful Bidder a Notice of Award within ninety (90) days after the day of the Bid Opening.
9. The Bidder to whom the contract is awarded shall, within ten (10) days after prescribed documents are presented for signature, execute and deliver the Contract Documents and any other forms or bonds required by the Bid to PWC.
10. The Bidder is required to complete the attached forms that will allow PWC to verify that the Bidder is qualified to perform the Work described in these Contract Documents. All forms shall be completed and submitted with the Bid. Failure to submit all the required forms shall be considered grounds for PWC to reject the bid.

PWC will review all of the bids and qualification data to determine the lowest responsive, responsible Bidder. PWC reserves the right to not award the Contract to the lowest bidder if the information provided is not complete, does not meet the satisfaction of PWC, or has been falsified. PWC will not request any additional information in order to allow the Contractor to complete bid.

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

be disqualified.

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

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

#### **R. TAXES**

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

#### **S. PERFORMANCE AND OTHER BONDS**

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

#### **T. E-VERIFY REQUIREMENTS**

1. Contractor hereby acknowledges that "E-Verify" is the federal E-Verify program operated by the US Department of Homeland Security and other federal agencies which is used to verify the work authorization of newly hired employees pursuant to federal law and in accordance with Article 2, Chapter 64 of the North Carolina General Statutes.
2. Contractor further acknowledges that all employers, as defined by Article 2, Chapter 64 of the North Carolina General Statutes, must use E-Verify and after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCGS §64-26(a).
3. Contractor hereby pledges, attests and warrants through execution of this Agreement that Contractor complies with the requirements of Article 2, Chapter 64 of the North Carolina General Statutes and further pledges, attests and warrants that any subcontractors currently employed by or subsequently hired by Contractor shall comply with any and all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement.

#### **U. IRAN DIVESTMENT ACT**

1. As mandated by N.C.G.S. 147-86.59(a), the Contractor hereby certifies that it is not listed

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

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

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

**BID SCHEDULE – PERFORMANCE AND DELIVERY  
FAYETTEVILLE PUBLIC WORKS COMMISSION  
REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK  
WATER RECLAMATION FACILITY**

Pre-Bid Meeting:	10:00 a.m., Thursday March 12, 2026
<b>(NON - MANDATORY)</b>	Fayetteville Public Works Commission Administrative Building Conference Room 107 955 Old Wilmington Road Fayetteville, NC 28301
Deadline for Questions from Bidders <sup>1</sup>	5:00 p.m., Friday, March 20,2026
Deadline for Addenda issued by PWC Procurement Department and Project Engineer <sup>2</sup>	5:00 p.m., Thursday, March 26, 2026
Bid Opening (Submittal Deadline)	2:00 p.m., Thursday, April 2, 2026
	Fayetteville Public Works Commission Administrative Building Conference Room 107 955 Old Wilmington Road Fayetteville, NC 28301
Target Commission Meeting	Wednesday, April 23, 2026
Target City Council Meeting	Monday, May 11, 2026
Contract Time:	90 days
Liquidated Damages:	\$500.00 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. SLS / SDBE Disclosure 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: **PWC2526073 - REPLACEMENT CLARIFIER #3 MCHANISM AT THE ROCKFISH CREEK WATER RECLAMATION FACILITY**

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.

**REPLACE MECHANISM IN CLARIFIER #3 AT THE  
ROCKFISH CREEK WATER RECLAMATION FACILITY**

**FAYETTEVILLE PUBLIC WORKS COMMISSION**

**PROPOSAL**

The Contractor shall furnish all superintendence, labor, skill, materials, equipment, and other items necessary to demolish, remove, dispose of, and replace with new, the mechanism in Clarifier #3 at the Rockfish Creek Water Reclamation Facility. Work includes but is not limited to mobilization, demolition and installation of new equipment, start-up, and site restoration.

All work and materials shall be in accordance with the requirements of the project General Terms and Conditions and Technical Specifications attached herein, complete, and ready for use.

**TOTAL LUM SUM BID:** \$ \_\_\_\_\_

( \_\_\_\_\_ )

**(Write out TOTAL LUMP SUM BID price in words)**

**- BID SUMMARY-**

**TOTAL BASE BID**

**\$ \_\_\_\_\_**

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 competition 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.

Communications concerning this Bid Bond shall be addressed to: (SURETY)  
Name, Address, Telephone Number, email)

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Failure to provide full and complete information will result in a bid being deemed non-responsive.

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

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Failure to provide full and complete information will result in a bid being deemed non-responsive.

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.)

**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:

**PWC2526073 – REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK WATER RECLAMATION FACILITY**

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  
PWC2526073 – REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK  
WATER RECLAMATION FACILITY**

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

sible units to facilitate minority participation.

**\*\*\* 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

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Signature

---

Printed Name

---

Title

---

Date

# SMALL AND DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

## Affidavit A: Listing of the Good Faith Efforts

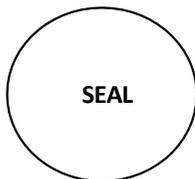
Affidavit of \_\_\_\_\_  
 (Name of Bidder)

**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**

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

**NOTICE OF AWARD**

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

**PROJECT DESCRIPTION: PWC2526073 – REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK WATER RECLAMATION FACILITY**

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**

**PWC2526073 – REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK  
WATER RECLAMATION FACILITY**

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 1**

**PERFORMANCE BOND**

Date of Execution: \_\_\_\_\_

Name of Principal: \_\_\_\_\_  
(Contractor)

Name of Surety: \_\_\_\_\_

Name of Contracting  
Body: Fayetteville Public Works Commission, Fayetteville, N.C.

**Amount of Bond:** \_\_\_\_\_

**PROJECT: PWC2526073 - REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK WATER RECLAMATION FACILITY**

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: PWC2526073 - REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK WATER RECLAMATION FACILITY**

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: PWC2526073 - REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK WATER RECLAMATION FACILITY**

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 -

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## **SECTION C – TECHNICAL SPECIFICATIONS**

**REPLACE CLARIFIER #3 MECHANISM AT THE  
ROCKFISH CREEK WATER RECLAMATION FACILITY**

**TECHNICAL SPECIFICATIONS**



**SECTION 01 11 00**  
**SUMMARY OF WORK**

**PART 1 – GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Summary
2. Location and Description of Work
3. Construction Contracts, This Project
4. Construction Contracts, Other Projects
5. Work by Others
6. Work by Owner
7. Owner Furnished Equipment and Materials
8. Owner Assigned Procurement Contracts
9. Owner Pre-selected Equipment and Materials
10. Sequence and Progress of Work
11. Contractor's Use of Site
12. Easements and Rights-of-Way
13. Notices to Owners and Authorities of Properties Adjacent to the Work
14. Salvage of Equipment and Materials
15. Partial Utilization by Owner

**1.2 LOCATION AND DESCRIPTION OF WORK**

A. The Work is located at the following Site:

1. Fayetteville Public Works Commission  
Rockfish Creek Water Reclamation Facility  
2536 Tracy Hall Rd.  
Fayetteville, NC 28301

- B. The Contractor shall perform all work required for such construction in accordance with the Contract Documents and subject to the terms and conditions of the Contract, complete and ready for use. The Work to be performed under this Contract includes, but is not limited to, constructing the Work described below and all appurtenances related to the Work. The Work shall be as following:
  1. Demolition and replacement of the mechanism in Clarifier #3 at the Rockfish Creek Water Reclamation Facility.

### **1.3 CONSTRUCTION CONTRACTS, THIS PROJECT**

- A. The Contracts under which the Project will be constructed are:
  1. Work specified in Divisions 01 through 46 (inclusive) of the Specifications.
  2. Work shown as redline mark-ups to the Record Drawing sheets from the original Clarifier #3 construction provided herein.

### **1.4 CONSTRUCTION CONTRACTS, OTHER PROJECTS (NOT USED)**

### **1.5 WORK BY OTHERS (NOT USED)**

### **1.6 WORK BY OWNER**

- A. Owner will perform the following in connection with the Work: Operate all existing valves, gates, pumps, equipment, and appurtenances that will affect Owner's operation, unless otherwise specified or indicated.

**1.7 OWNER-FURNISHED EQUIPMENT AND MATERIALS (NOT USED)**

**1.8 OWNER ASSIGNED PROCUREMENT DOCUMENTS (NOT USED)**

**1.9 OWNER PRE-SELECTED EQUIPMENT AND MATERIALS**

- A. Contractor shall provide equipment and material in accordance with the Contract Documents.

**1.10 SEQUENCE AND PROGRESS OF WORK**

- A. Requirements for sequencing and coordinating with Owner's operations, including maintenance of plant operations during construction, and requirements for tie-ins and shutdowns, are in Section 01 14 00 – Coordination with Owner's Operations.

**1.11 CONTRACTOR'S USE OF SITE**

- A. Contractors' use of the Site shall be confined to the areas shown. Contractors shall share use of the Site with other contractors and others specified in this Section.
- B. Contractor shall move stored products that interfere with operations of Owner, other contractors, or others performing work for Owner.

**1.12 EASEMENTS AND RIGHTS-OF-WAY**

- A. Easements and rights-of-way will be provided by Owner in accordance with the General Conditions. Confine construction operations to within Owner's property, public rights-of-way, easements obtained by Owner, and the limits shown. Use care in placing construction tools, equipment, excavated materials, and products to be incorporated into the Work to avoid damaging property and interfering with traffic. Do not enter private property outside the construction limits without permission from the owner of the property.

**1.13 NOTICES TO OWNERS AND AUTHORITIES OF PROPERTIES ADJACENT TO THE WORK**

- A. Notify owners of adjacent property and utilities when execution of the Work may affect their property, facilities, or use of property.
- B. When it is necessary to temporarily obstruct access to property, or when utility service connection will be interrupted, provide notices sufficiently in advance to enable affected

persons to provide for their needs. Conform notices to Laws and Regulations and, whether delivered orally or in writing, include appropriate information concerning the interruption and instructions on how to limit inconvenience caused.

- C. Notify utility owners and other concerned entities at least 48 hours prior to cutting or closing streets or other traffic areas or excavating near Underground Facilities or exposed utilities.

#### **1.14 SALVAGE OF EQUIPMENT AND MATERIALS**

- A. Existing equipment and materials removed and not shown or specified to be reused in the Work will be Contractor's property, except the following items that shall remain Owner's property:
  - 1. The owner will retain all miscellaneous metals that are demolished as part of this project. Metals shall include piping, pipe supports, grating, handrail, slide gates, equipment, and any other item which may be scrapped that is part of the demolition.
- B. Existing equipment and material removed by Contractor shall not be reused in the Work, except where specified or indicated.
- C. Carefully remove in manner to prevent damage all equipment and materials specified or indicated to be salvaged and reused or to remain property of Owner. Store and protect salvaged items specified or indicated to be used in the Work. Replace in kind or with new items equipment, materials, and components damaged in removal, storage, or handling through carelessness or improper procedures.
  - 1. PWC will provide a separate on-site container for the collection of scrap metal material for collection by a third party. The Contractor shall be responsible for sorting and placing all salvageable metal into the separate on-site container for each type of metal removed and for cutting any material to a size which will fit into the supplied container.
- D. Contractor may furnish and install new items, with Engineer's approval, instead of those specified or indicated to be salvaged and reused, in which case such removed items will become Contractor's property.

#### **1.15 PARTIAL UTILIZATION BY OWNER**

- A. Owner reserves the right to enter and use portions of the Work prior to Certificate of Substantial Completion is issued by Engineer.

- B. Owner shall be responsible to prevent premature connections by private and public parties, persons or groups of persons, before Engineer issues Certificate of Substantial Completion for the portion of Work being partially utilized by Owner.
- C. Contractor shall cooperate with Owner, Owner's agents, and Engineer to accelerate completion of Work designed for partial utilization by Owner in accordance with Contractor's progress schedule.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01 33 00**  
**SUBMITTAL PROCEDURES**

**PART 1 – GENERAL**

**1.01 SUMMARY**

A. Section includes:

1. Contractor shall provide submittals in accordance with the General Conditions as modified by the Supplementary Conditions, and this Section.
2. Contractor is responsible to confirm and correct dimensions at the Site, for information pertaining to the fabrication processes and to techniques of construction, and for coordinating the work of all trades. Contractor's signature of submittal's stamp and letter of transmittal shall be Contractor's representation that Contractor has met his obligations under the Contract Documents relative to that submittal.

B. Related Sections:

1. Section 01 25 00 – Substitution Procedures.
2. Section 01 78 23 – Operation and Maintenance Data.
3. Section 01 78 39 – Project Record Documents.
4. Section 01 78 43 – Spare Parts and Extra Material.
5. Section 01 79 00 – Instruction of Owner's Personnel.

**1.02 ADMINISTRATIVE REQUIREMENTS**

A. Types of Submittals: When type of submittal is not specified and is not specified in this Section, Engineer will determine type of submittal.

1. Action/Informational Submittals:

- a. Shop Drawings.
- b. Product data.
- c. Delegated design submittals in accordance with the General Conditions and as modified by the Supplemental Conditions.
- d. Samples.

- e. Testing plans, procedures, and testing limitations.
  - f. Design data not sealed and signed by a design professional retained by Contractor, Subcontractor, or Supplier.
  - g. Pre-construction test and evaluation reports, such as reports on pilot testing, subsurface investigations, potential Hazardous Environmental Conditions, and similar reports.
  - h. Supplier instructions, including installation data, and instructions for handling, starting-up, and troubleshooting.
  - i. Sustainable design submittals (other than sustainable design closeout documentation).
  - j. Lesson plans for training and instruction of Owner's personnel.
2. Closeout Submittals:
- a. Maintenance contracts.
  - b. Operations and maintenance data.
  - c. Bonds, such as maintenance bonds and bonds for a specific product or system.
  - d. Warranty documentation.
  - e. Record documentation.
  - f. Sustainable design closeout documentation.
  - g. Software.
3. Maintenance Material Submittals:
- a. Maintenance materials schedule and checklist.
  - b. Spare parts.
  - c. Extra stock materials.
  - d. Tools.
4. Quality Assurance Submittals:
- a. Performance affidavits.

- b. Certificates.
- c. Source quality control submittals (other than testing plans, procedures, and testing limitations), including results of shop testing.
- d. Field or Site quality control submittals (other than testing plans, procedures, and testing limitations), including results of operating and acceptability tests at the Site.
- e. Supplier reports.
- f. Special procedure submittals, including health and safety plans and other procedural submittals.
- g. Qualifications statements.

B. Submittal Requirements:

- 1. Contractor shall submit electronic copy of submittals for Engineer's review via Procore Document Management, unless otherwise specified in individual Specification Sections. Acceptable electronic formats are Adobe PDF, Microsoft Word, Autodesk DWF and AutoCAD.
- 2. Submittals shall be furnished in two dimensional PDF.
- 3. Submittal shall be accompanied by letter of transmittal containing date, project title, Contractor's name, number and title of submittal, list of relevant Specification Sections, notification of deviations from Contract Documents, and other material required for Engineer's review.

C. Scheduling:

- 1. Provide submittals well in advance of the Work following Engineer's approval or acceptance of the associated submittal. Work covered by a submittal will not be included in progress payments until approval or acceptance of related submittals has been obtained in accordance with the Contract Documents.
- 2. Submittals shall be provided by Contractor with at least thirty (30) working days for review and processing.

**1.03 SCHEDULE OF SUBMITTALS**

A. Schedule of Submittals, as specified in this Section:

- 1. Timing:
  - a. Provide submittal within time frames specified in the Contract Documents.

- b. Provide updated Schedule of Submittals with each submittal of the updated Progress Schedule.
2. Content: In accordance with the General Conditions as modified by the Supplementary Conditions, and this Section. Requirements for content of preliminary Schedule of Submittals and subsequent submittals of the Schedule of Submittals are identical.
  - a. Identify submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Indicate submittals that are on the Project's critical path.
  - b. Indicate the following for each submittal:
    - 1) Date when submittals are requested and received from Supplier.
    - 2) Date when certification is received from Supplier and when submitted to Engineer.
    - 3) Date when submittals are submitted to Engineer and returned with disposition from Engineer.
    - 4) Date when submittals are revised by Supplier and submitted to Engineer.
    - 5) Date when submittals are returned with "Furnish as Submitted" (FAS) or "Furnish as Corrected" (FAC) disposition from Engineer.
    - 6) Date when approved submittals are returned to Supplier.
    - 7) Date of Supplier scheduled delivery of equipment and material.
    - 8) Date of actual delivery of equipment and material.
    - 9) Whether submittal will be for a substitution or "equal". Procedures for substitutions and "or equals" are specified in the General Conditions and the Section 01 25 00 – Substitution Procedures.
    - 10) For submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of other contractors.
3. Prepare Schedule of Submittals using same software, and in same format, specified for Progress Schedules.
4. Coordinate Schedule of Submittals with the Progress Schedule.

5. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate submittals on the Project's critical path, or that places extraordinary demands on Engineer for time and resources, is unacceptable. Do not include submittals not required by the Contract Documents.
6. In preparing Schedule of Submittals:
  - a. Considering the nature and complexity of each submittal, allow sufficient time for review and revision.
  - b. Reasonable time shall be allowed for: Engineer's review and processing of submittals, for submittals to be revised and resubmitted, and for returning submittals to Contractor.
  - c. Identify and accordingly schedule submittals that are expected to have long anticipated review times.

#### **1.04 ACTION/INFORMATIONAL SUBMITTALS**

- A. Provide the following Submittals in accordance with the individual Specification Sections, including, but not limited to, the following:
  1. Product Data:
    - a. Catalog cut-sheets
    - b. Descriptive bulletins/brochures/specifications
    - c. Material of construction data, including details on all components including applicable ASTM designations.
    - d. Lifting, erection, installation, and adjustment instructions, and recommendations.
    - e. Finish/treatment data, including interior and exterior shop coating systems.
    - f. Equipment/material weight/loading data, including total uncrated weight of the equipment plus the approximate weight of shipped materials. Support locations and loads that will be transmitted to bases and foundations following installation. Size, placement, and embedment requirements of anchor bolts.
    - g. Complete information regarding location, type, size, and length of all field welds in accordance with "Standard Welding Symbols" AWS A2.0 of the American Welding Society. Special conditions shall be fully explained by notes and details.

- h. Motor data including horsepower; enclosure type; voltage; insulation class; temperature rise and results of dielectric tests; service-rating; rotative speed; motor speed-torque relationship; efficiency and power factor at  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and full load; slip at full load; running, full load, and locked rotor current values; safe running time-current curves; motor protective devices; and interconnection diagrams.
  - i. Engineering design data, calculations, and system analyses
  - j. Digital system documentation
  - k. Operating sequence descriptions
  - l. Software/programming documentation
  - m. Manufacturer's instructions
2. Shop Drawings:
- a. Equipment and material layout drawings, including panel layout drawings.
  - b. System schematics and diagrams including, but not limited to, piping systems; HVAC and ventilation systems; process equipment systems; electrical operating systems; wiring diagrams; controls, alarm and communication systems.
  - c. Layout and installation drawings (interior and exterior) for all pipes, valves, fittings, sewers, drains, heating and ventilation ducts, all electrical, heating, ventilating and other conduits, plumbing lines, electrical cable trays, lighting fixture layouts, and circuiting, instrumentation, interconnection wiring diagrams, communications, power supply, alarm circuits, etc.
  - d. Layout and installation drawings shall show connections to structures, equipment, sleeves, valves, fittings, etc.
  - e. Drawings shall show the location and type of all supports, hangers, foundations, etc., and the required clearances to operate valves, equipment, etc.
  - f. Drawings for pipes, ducts, conduits, etc., shall show all 3 inch and larger electrical conduits and pressure piping, electrical cable trays, heating and ventilation ducts or pipes, structure, manholes or any other feature within four (4) feet (measured as the clear dimension) from the pipe duct, conduit, etc., for which the profile is drawn.
  - g. Equipment and material schedules.

3. Delegated design submittals, which include documents prepared, sealed, and signed by a design professional retained by Contractor, Subcontractor, or Supplier for materials and equipment to be incorporated into the completed Work. Delegated design submittals do not include submittals related to temporary construction unless specified otherwise in the related Specification Section. Delegated design submittals include: design drawings, design data including calculations, specifications, certifications, and other submittals prepared by such design professional.

B. Samples:

1. General Requirements:

- a. Conform submittal of Samples to the General Conditions as modified by the Supplementary Conditions, this Section, and the Specification Section in which the Sample is specified.
- b. Furnish at the same time Samples and submittals that are related to the same unit of Work or Specification Section. Engineer will not review submittals without associated Samples and will not review Samples without associated submittals.
- c. Samples shall clearly illustrate functional characteristics of product, all related parts and attachments, and full range of color, texture, pattern, and material.

2. Submittal Requirements:

- a. Securely label or tag Samples with submittal identification number. Label or tag shall not cover, conceal, or alter appearance or features of Sample. Label or tag shall not be separated from the Sample.
- b. Submit number of Samples required in Specifications. If number of Samples is not specified in the associated Specification Section, provide at least one identical Samples of each item required for Engineer's approval. If Contractor requires Sample(s) for Contractor's use, notify Engineer in writing and provide additional Sample(s). Contractor is responsible for furnishing, shipping, and transporting additional Samples.
- c. Deliver one Sample to Engineer's field office at the Site. Deliver balance of Samples to location directed by Engineer.

## 1.05 CLOSEOUT SUBMITTALS

- A. Provide the following Closeout Submittals in accordance with the individual Specification Sections, including, but not limited to, the following:

1. Maintenance contracts
  2. Bonds for specific products or systems
  3. Warranty documentation
  4. Sustainable design closeout documentation.
  5. Software programming and documentation.
- B. On documents such as maintenance contracts and bonds, include on each document furnished original signature of entity issuing the document.
- C. Operations and Maintenance Data: Submit in accordance with Section 01 78 23 – Operations and Maintenance Data.
- D. Record Documentation: Submit in accordance with Section 01 78 39 – Project Record Documents.
- E. Disposition: Dispositions and meanings are the same as specified for Informational Submittals.

#### **1.06 MAINTENANCE MATERIAL SUBMITTALS**

- A. For spare parts, extra stock materials, and tools, submit quantity of items specified in associated Specification Section. Furnish in accordance with Section 01 78 43 – Spare Parts and Extra Materials.
- B. Disposition: Dispositions and meanings are the same as specified for Informational Submittals.

#### **1.07 CONTRACTOR'S RESPONSIBILITIES**

- A. Contractor shall review, coordinate, and verify submittals with Subcontractors, Manufacturers, and Suppliers, including field measurements at Site, in accordance with the General Conditions and as modified by Supplemental Conditions prior to submitting material for Engineer's review.
- B. Contractor shall provide Contractor's stamp of approval certifying submittal material has been reviewed and conform to the Contract Documents prior to submitting material for Engineer's review.
- C. Contractor shall provide written notice of deviations or variations that submittal may have with the Contract Documents.
- D. Contractor shall provide bound, dated, labeled, tabulated, and consecutively numbered submittals as specified in the individual Specification Section. Label shall contain the following:

1. Specification Section.
  2. Referenced Drawing number.
  3. Subcontractor or Supplier name.
  4. Type of equipment and/or materials.
- E. Contractor shall perform the following after receiving Engineer's review disposition:
1. Order, fabricate, or ship equipment and materials included in the submittal (pending Engineer's review of source quality control submittals) with the following disposition:
    - a. "Furnish as Submitted" (FAS).
    - b. "Furnish as Corrected" (FAC).
    - c. "Furnish as Corrected – Confirm" (FACC), only portions of Work that do not require resubmittal for Engineer's review.
  2. Resubmittal requirements:
    - a. Partial resubmittal of "Furnish as Corrected – Confirm" (FACC) returned dispositions, until Engineer's disposition is either "Furnish as Submitted" (FAS) or "Furnish as Corrected" (FAC).
    - b. Full resubmittal of material with Engineer's disposition of "Revise and Resubmit" (R&R), until Engineer's disposition is "Furnish as Submitted" (FAS), "Furnish as Corrected" (FAC), or "Furnish as Corrected – Confirm" (FACC) that requires a partial resubmittal.
    - c. Contractor shall be responsible for Engineer's charges to Owner if submittals are not approved within the number of specified submittals in accordance with the General Conditions. Engineer's charges shall include, but not limited to, additional review effort, meetings, and conference calls with Contractor, Subcontractor, or Supplier.

## **1.08 ENGINEER'S REVIEW**

- A. Engineer's review of the Contractor's submittal shall not relieve Contractor's responsibility under the Contract Document in accordance with the General Conditions and as modified in the Supplemental Conditions. An acceptance of a submittal shall be intended to mean the Engineer does not have specific objection to the submitted material, subject to conformance with the Contract Drawings and Specifications.
- B. Engineer's review of Contractor's submittal shall be confined to general arrangement and compliance with the Contract Documents, and shall not be for the purpose of

checking dimensions, weights, clearances, fittings, tolerances, interferences, coordination of Subcontractor work, etc.

C. Review Dispositions:

1. "Furnish as Submitted" (FAS) – No exceptions are taken.
2. "Furnish as Corrected" (FAC) – Minor corrections are noted for Contractor's correction.
3. "Furnish as Corrected – Confirm" (FACC) – Corrections are noted and partial resubmittal shall be made as noted.
4. "Revise and Resubmit" (R&R) – Corrections are noted and complete resubmittal shall be made. Submittal does not conform to applicable requirements of the Contract Documents and is not acceptable. Revise submittal and re-submit to indicate acceptability and conformance with the Contract Documents.
5. "Receipt Acknowledged" (RA) –
  - a. Information included in submittal conforms to the applicable requirements of the Contract Documents and is acceptable. No further action by Contractor is required relative to this submittal, and the Work covered by the submittal may proceed, and products with submittals with this disposition may be shipped or operated, as applicable.
  - b. Information included in submittal is for Project record purposes and does not require Engineer's review or approval.
6. "Rejected" (R) – Information included in submittal does not conform to the applicable requirements of the Contract Documents and is unacceptable. Contractor shall submit products and materials as specified in the Contract Documents or provide required information for substitution as specified in the Contract Documents for consideration by Engineer.

D. Electronic Submittal Return to Contractor: Electronic submittals shall be returned electronically with dispositions provided.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 35 20**  
**CONFINED SPACE ENTRY PLAN**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Owner has determined that portions of the Site may constitute confined spaces or permit-required confined spaces, as defined in this Section.
- B. Contractor shall provide appropriate measures, including labor, supervision, equipment, protective devices, and incidentals, to protect the health and safety of personnel at the Site relative to confined spaces, and who may be affected by the Work in confined spaces including, without limitation: employees and agents of Contractor, Subcontractors, Suppliers, Owner, and Engineer, while engaged in performance of their respective duties at Site.
- C. Comply with requirements of Owner’s confined space entry program, if any.

**1.02 REFERENCES**

- A. Definitions: The following words or terms are not defined but, when used in this Section, have the following meaning:
  - 1. “Confined spaces” are areas on or about the Site as defined in 29 CFR 1910.146(b) and 29 CFR 1926.1202. Confined spaces include, but are not limited to: storage tanks, process vessels, bins, boilers and similar spaces; ventilation or exhaust ducts and stacks; manholes, underground utility vaults and chambers, sewers, pipelines, tunnels; and open-topped spaces greater than four feet deep, such as pits, tubs, vaults, and vessels.
  - 2. “Entry permit” means the written or printed document provided by the employer of personnel entering permit-required confined space, to allow and control entry into permit-required confined space and that contains the information specified in 29 CFR 1910.146(f) and 29 CFR 1926.1206.
  - 3. “Permit-required confined space” means confined space as defined in 29 CFR 1926.146(b) and 29 CFR 1926.1202 and that has one or more of the following characteristics:
    - a. Contains or has potential to contain a hazardous atmosphere.
    - b. Contains material that has potential for engulfing an entrant.

- c. Has internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or floors, or by floor that slopes downward and tapers to a smaller cross-section.
    - d. Contains other recognized serious safety or health hazard.
  - 4. "Hot work permit" means the written authorization of employer of personnel entering a confined space to perform operations, such as riveting, welding, cutting, burning, and heating, capable of providing a source of ignition.
  - 5. "Host Employer" means the employer that owns or manages the property where construction is taking place.
  - 6. "Controlling Contractor" is the employer that has overall responsibility for construction at the worksite.
- B. Reference Standards: Comply with Laws and Regulations related to protecting personnel working in or entering confined spaces, including:
  - 1. Code of Federal Regulations (CFR), Title 29, Part 1910, Occupational Safety and Health Standards.
  - 2. CFR, Title 29, Part 1926, Safety and Health Regulations for Construction.

### **1.03 PLAN REQUIREMENTS**

- A. Review host employer's existing confined space inventory and entry procedures, if available, in order to prepare Site- and task-specific confined space entry plans which shall be incorporated into Contractor's Site-specific health and safety plan. Maintain copy of the confined space entry plan at the Site for access by employees, Owner and authorities having jurisdiction. Confined space entry plan shall include:
  - 1. Results of Contractor's Site-specific hazard assessment to identify confined spaces that are permit-required confined spaces, including list of all such spaces that will be accessed for the Work. Update the list as required throughout the Project.
  - 2. Requirements for safeguarding access to, and restricting non-permitted personnel from access to, permit-required confined spaces during the Work.
  - 3. Project-specific procedures to be followed when entering or accessing permit-required confined spaces.
  - 4. Documentation of training provided to each person that will enter, or work in conjunction with entry to, permit-required confined spaces

5. Update the plan by adding copies of permits issued and records of entry to permit-required confined spaces, as required in this Section.

**B. Confined Space Safety:**

1. Personnel entering confined space shall be trained in accordance with 29 CFR 1926.1207 and 29 CFR 1910.146(g).
2. Comply with 29 CFR 1926 Subpart AA and requirements of authorities having jurisdiction.
3. Recordkeeping: Using forms required by Contractor, Owner, or authority having jurisdiction, issue for each instance of access to permit-required confined space, completed permit(s) and complete associated data sheet. File completed permits and data sheets in the Site-specific confined space entry plan and submit in accordance with this Section.
  - a. Permit for entry to permit-required confined space(s).
  - b. Permit for hot work in permit-required confined space(s).
  - c. Complete confined space data sheet.

**1.04 SUBMITTALS**

- A. If acceptable, written response for Submittals required in this Section will not be returned to Contractor.
- B. Submit the following to Owner; if submittals under this Section are furnished to Engineer, Engineer will forward all submittals under this Section to Owner without review.
  1. Procedures: Site-specific confined space entry plan, submitted upon request of Owner.
  2. Permits and Reports: For each time personnel enter a confined space, copies of completed permits required for confined space entry, and completed confined space data sheets, submitted upon request of Owner.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

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## SECTION 02 41 16

### DEMOLITION AND REMOVAL OF EXISTING STRUCTURES AND EQUIPMENT

#### PART 1 – GENERAL

##### 1.01 THE REQUIREMENT

- A. This Section covers the demolition, removal, and disposal of existing buildings and structures, removal and disposal of asbestos materials, and any existing equipment including electrical, plumbing, heating, and ventilating equipment and piping not required for the operation of the rehabilitated plant as indicated on the Drawings and as specified hereinafter. The Contractor shall furnish all labor, materials, and equipment to demolish buildings and structures and to remove fixtures, anchors, supports, piping, and accessories designated to be removed on the Drawings.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01 14 00 - Coordination with Owner's Operations
- B. Section 01 42 00 - References
- C. Section 01 73 00 – Execution of Work

##### 1.03 TITLE TO EQUIPMENT AND MATERIALS

- A. Contractor shall have no right or title to any of the equipment, materials, or other items to be removed from the existing buildings or structures unless and until said equipment, materials and other items have been removed from the premises. The Contractor shall not sell or assign or attempt to sell or assign any interest in the said equipment, materials, or other items until the said equipment, materials or other items have been removed.
- B. Contractor shall have no claim against the Owner because of the absence of such fixtures and materials.

##### 1.04 CONDITION OF STRUCTURES AND EQUIPMENT

- A. The Owner does not assume responsibility for the actual condition of structures and equipment to be demolished and removed.
- B. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner so far as practical.
- C. The information regarding the existing structures and equipment shown on the Drawings is based on visual inspection and a walk-through survey only. Neither the Engineer nor

the Owner will be responsible for interpretations or conclusions drawn therefrom by the Contractor.

## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION**

### **3.01 DEMOLITION AND REMOVALS**

- A. The removal of all equipment and piping, and all materials from the demolition of buildings and structure shall, when released by the Owner and Engineer, shall be done by the Contractor, and shall become the Contractor's property, unless otherwise noted, for disposition in any manner not contrary to the Contract requirements and shall be removed from the site to the Contractor's own place of disposal.
- B. The Electrical Contractor (Subcontractor) specifically, shall de-energize all panelboards, lighting fixtures, switches, circuit breakers, electrical conduits, motors, limit switches, pressure switches, instrumentation such as flow, level and/or other meters, wiring, and similar power equipment prior to removal. Any electric panels or equipment which are to be retained shall be relocated or isolated by the Electrical Contractor (Subcontractor) specifically, prior to the removal of the equipment specified herein.
- C. The Contractor shall proceed with the removal of the equipment, piping and appurtenances in a sequence designed to maintain the plant in continuous operation as described in Section 01 14 00 - Coordination with Owner's Operations and shall proceed only after approval of the Engineer.
- D. Any equipment piping and appurtenances removed without proper authorization, which are necessary for the operation of the existing facilities shall be replaced to the satisfaction of the Engineer at no cost to the Owner.
- E. Excavation caused by demolition shall be backfilled with fill free from rubbish and debris. Select fill or structural fill shall be used where specifically required on Contract Drawings.
- F. Burning of any debris resulting from the demolition will not be permitted at the site.
- G. Where parts of existing structures are to remain in service, demolish the portions to be removed, repair damage, and leave the structure in proper condition for the intended use. Remove concrete and masonry to the lines designated by drilling, chipping, or other suitable methods. Leave the resulting surfaces reasonably true and even, with sharp straight corners that will result in neat joints with new construction and be satisfactory for the purpose intended. Where existing reinforcing bars are to extend into new construction, remove the concrete so that the reinforcing is clean and undamaged. Cut off other reinforcing 1/2-inch below the surface and fill with epoxy resin binder flush with the surface.

- H. Prior to the execution of the work, the Contractor, Owner and Engineer shall jointly survey the condition of the adjoining and/or nearby structures. Photographs and records shall be made of any prior settlement or cracking of structures, pavements, and the like, that may become the subject of possible damage claims.

### **3.02 PROTECTION**

- A. Demolition and removal work shall be performed by competent experienced workmen for the various type of demolition and removal work and shall be carried out through to completion with due regard to the safety of Owner employees, workmen on-site and the public. The work shall be performed with as little nuisance as possible.
- B. The work shall comply with the applicable provisions and recommendation of OSHA all governing codes, and as hereinafter specified.
- C. The Contractor shall make such investigations, explorations, and probes as are necessary to ascertain any required protective measures before proceeding with demolition and removal. The Contractor shall give particular attention to shoring and bracing requirements to prevent any damage to new or existing construction.
- D. The Contractor shall provide, erect, and maintain catch platforms, lights, barriers, weather protection, warning signs and other items as required for proper protection of the public, occupants of the building, workmen engaged in demolition operations, and adjacent construction.
- E. The Contractor shall provide and maintain weather protection at exterior openings to fully protect the interior premises against damage from the elements until such openings are closed by new construction.
- F. The Contractor shall provide and maintain temporary protection of the existing structure designated to remain where demolition, removal and new work is being done, connections made, materials handled, or equipment moved.
- G. The Contractor shall take necessary precautions to prevent dust from rising by wetting demolished masonry, concrete, plaster, and similar debris. Unaltered portions of the existing buildings affected by the operations under this Section shall be protected by dust-proof partitions and other adequate means.
- H. The Contractor shall provide adequate fire protection in accordance with local Fire Department requirements.
- I. The Contractor shall not close or obstruct walkways, passageways, or stairways and shall not store or place materials in passageways, stairs, or other means of egress. The Contractor shall conduct operations with minimum traffic interference.
- J. The Contractor shall be responsible for any damage to the existing structure or contents by reason of the insufficiency of protection provided.

### 3.03 WORKMANSHIP

- A. The demolition and removal work shall be performed as described in the Contract Documents. The work required shall be done with care, and shall include all required shoring, bracing, etc. The Contractor shall be responsible for any damage which may be caused by demolition and removal work to any part or parts of existing structures or items designated for reuse or to remain. The Contractor shall perform patching, restoration, and new work in accordance with applicable Technical Sections of the Specifications and in accordance with the details shown on the Drawings. Prior to starting of work, the Contractor shall provide a detailed description of methods and equipment to be used for each operation and the sequence thereof for review by the Engineer.
- B. All supports, pedestals and anchors shall be removed with the equipment and piping unless otherwise specified or required. Concrete bases, anchor bolts and other supports shall be removed to approximately 1-inch below the surrounding finished area and the recesses shall be patched to match the adjacent areas. Superstructure wall and roof openings shall be closed, and damaged surfaces shall be patched to match the adjacent areas, as specified under applicable Sections of these Specifications, as shown on the Drawings, or as directed by the Engineer. Wall sleeves and castings shall be plugged or blanked off, all openings in concrete shall be closed in a manner meeting the requirements of the appropriate Sections of these Specifications, as shown on the Drawings, and as directed and approved by the Engineer.
- C. Materials or items designated to remain the property of the Owner shall be as hereinafter tabulated. Such items shall be removed with care and stored at a location at the site to be designated by the Owner.
- D. Where equipment is shown or specified to be removed and relocated, the Contractor shall not proceed with removal of this equipment without specific prior approval of the Engineer. Upon approval, and prior to commencing removal operations, the equipment shall be operated in the presence of representatives of the Contractor, Owner and Engineer. Such items shall be removed with care, under the supervision of the trade responsible for reinstallation and protected and stored until required. Material or items damaged during removal shall be replaced with similar new material or item. Any equipment that is removed without proper authorization and is required for plant operation shall be replaced at no cost to the Owner.
- E. Wherever piping is to be removed for disposition, the piping shall be drained by the Contractor and adjacent pipe and headers that are to remain in service shall be blanked off or plugged and then anchored in an approved manner.
- F. Materials or items demolished and not designated to become the property of the Owner or to be reinstalled shall become the property of the Contractor and shall be removed from the property and legally disposed of.

- G. The Contractor shall execute the work in a careful and orderly manner, with the least possible disturbance to the public and to the occupants of the building.
- H. In general, masonry shall be demolished in small sections, and where necessary to prevent collapse of any construction, the Contractor shall install temporary shores, struts, and bracing.
- I. Where alterations occur, or new and old work join, the Contractor shall cut, remove, patch, repair or refinish the adjacent surfaces to the extent required by the construction conditions, to leave the altered work in as good a condition as existed prior to the start of the work. The materials and workmanship employed in the alterations, unless otherwise shown on the Drawing or specified, shall comply with that of the various respective trades which normally perform the items of work.
- J. The Contractor shall finish adjacent existing surfaces to new work to match the specified finish for new work. The Contractor shall clean existing surfaces of dirt, grease, loose paint, etc., before refinishing.
- K. The Contractor shall cut out embedded anchorage and attachment items as required to properly provide for patching and repair of the respective finishes.
- L. The Contractor shall confine cutting of existing roof areas designated to remain to the limits required for the proper installation of the new work. The Contractor shall cut and remove insulation, etc., and provide temporary weather tight protection as required until new roofing and flashings are installed.
- M. The Contractor shall remove temporary work, such as enclosures, signs, guards, and the like when such temporary work is no longer required or when directed at the completion of the work.

### **3.04 MAINTENANCE**

- A. The Contractor shall maintain the buildings, structures, and public properties free from accumulations of waste, debris, and rubbish, caused by the demolition and removal operations.
- B. The Contractor shall provide on-site dump containers for collection of waste materials, debris, and rubbish, and shall wet down dry materials to lay down and prevent blowing dust.
- C. At reasonable intervals during the progress of the demolition and removal work or as directed by the Engineer, the Contractor shall clean the site and properties, and dispose of waste materials, debris, and rubbish.

### **3.05 EQUIPMENT AND MATERIALS RETAINED BY OWNER**

- A. All debris resulting from the demolition and removal work shall be disposed of by the Contractor as part of the work of this Contract. Material designated by the Engineer to be salvaged shall be stored on the construction site as directed. All other material shall be disposed of off-site by the Contractor at his expense.

**END OF SECTION**

**SECTION 09 90 00**  
**PAINTING**

**PART 1 – GENERAL**

**1.01 THE REQUIREMENT**

- A. Furnish labor, materials, equipment and appliances required for complete execution of Work shown on Drawings and Specified herein.
- B. Section Includes:
  - 1. Paint Materials
  - 2. Shop Painting
  - 3. Field Painting
    - a. Surface Preparation
    - b. Piping and Equipment Identification
    - c. Schedule of Colors
    - d. Work in Confined Spaces
    - e. OSHA Safety Colors

**1.02 RELATED SECTIONS**

- A. Section 40 05 97 – Piping and Equipment Identification Systems
- B. Section 07 90 00 – Joint Fillers, Sealants, and Caulking

**1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS**

- A. Without limiting the generality of these specifications, the Work shall conform to the applicable requirements of the following documents:
  - 1. SSPC – The Society for Protective Coatings Standards
    - a. SSPC-Vis 1 – Pictorial Surface Preparation Standards for Painting Steel Structures
    - b. SSPC-SP2 – Hand Tool Cleaning
    - c. SSPC-SP3 – Power Tool Cleaning

- d. SSPC-SP5/NACE 1 – White Metal Blast Cleaning
  - e. SSPC-SP6/NACE 3 – Commercial Blast Cleaning
  - f. SSPC-SP7/NACE 4 – Brush-off Blast Cleaning
  - g. SSPC-SP10/NACE 2 – Near-White Metal Blast
  - h. SSPC-SP11 – Power Tool Cleaning to Bare Metal
  - i. SSPC-SP13/NACE6 – Surface Preparation of Concrete
2. ICRI – International Concrete Repair Institute
  3. NACE – National Association of Corrosion Engineers
  4. NAFP – The National Association of Pipe Fabricators
  5. ASTM D1737 – Test Method for Elongation of Attached Organic Coatings with Cylindrical Mandrel Apparatus
  6. ASTM B117 – Method of Salt Spray (Fog) Testing
  7. ASTM D4060 – Test Method for Abrasion Resistance of Organic Coating by the Taber Abraser
  8. ASTM D3359 – Method for Measuring Adhesion by Tape Test

#### **1.04 SUBMITTALS**

- A. In accordance with the procedures and requirements set forth in Section 01 33 00 – Submittal Procedures, submit the following:
  1. Manufacturer's literature and Material Safety Data Sheets for each product.
  2. Painting schedule identifying surface preparation and paint systems proposed. Cross reference with Tables 1 and 2. Provide the name of the paint manufacturer, and name, address, and telephone number of manufacturer's representative who will inspect the work. Submit schedule for approval as soon as possible following the Award of Contract, so approved schedule may be used to identify colors and specify shop paint systems for fabricated items. Manufacturer shall substitute paint system with equal performance where required for VOC compliance.
  3. Contractor shall submit Q.C. Inspection plan describing all tests and inspections task to be performed. Include copy of daily log showing environmental conditions measurements and frequency. Copy of completed log shall be provided at completion of work.

### **1.05 SYSTEM DESCRIPTION**

- A. Work shall include surface preparation, paint application, inspection of painted surfaces and corrective action required, protection of adjacent surfaces, cleanup and appurtenant work required for the proper painting of all surfaces to be painted. Surfaces to be painted are designated within the Painting Schedule and may include new and existing piping, miscellaneous metals, equipment, buildings, exterior fiberglass, exposed electrical conduit and appurtenances.
- B. Perform Work in strict accordance with manufacturer's published recommendations and instructions, unless the Engineer stipulates that deviations will be for the benefit of the project.
- C. Paint surfaces which are customarily painted, whether indicated to be painted or not, with painting system applied to similar surfaces, areas and environments, and as approved by Engineer.
- D. Piping and equipment shall receive color coding and identification. Equipment shall be the same color as the piping system.

### **1.06 QUALITY ASSURANCE**

- A. Painting operations shall be accomplished by skilled craftsman and licensed by the state/commonwealth to perform painting work.
- B. Provide a letter indicating that the painting applicator has five years of experience, and 5 references which show previously successful application of the specified or comparable painting systems. Include the name, address, and the telephone number for the Owner of each installation for which the painting applicator provided services.
- C. Contractor shall coordinate Q.C Inspections.
- D. Notify Owner and Engineer at completion of surface preparation, priming application and final cure to allow inspection by Owner and Engineer or their Third-Party Inspector.

### **1.07 STORAGE AND DELIVERY**

- A. Bring materials to the job site in the original sealed and labeled containers.
- B. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

## **PART 2 – MATERIALS**

### **2.01 GENERAL INFORMATION**

- A. The term "paint" is defined as both paints and coatings including emulsions, enamels, stains, varnishes, sealers, and other coatings whether organic or inorganic and whether used as prime, intermediate, or finish coats.
- B. Purchase paint from an approved manufacturer. Manufacturer shall assign a representative to inspect application of their product both in the shop and field. The manufacturer's representative shall submit a report to the Engineer at the completion the Work identifying products used and verifying that surfaces were properly prepared, products were properly applied, and the paint systems were proper for the exposure and service.
- C. Provide primers and intermediate coats produced by same manufacturer as finish coat. Use only thinners approved by paint manufacturer, and only within manufacturer's recommended limits.
- D. Ensure compatibility of total paint system for each substrate. Test shop primed equipment delivered to the site for compatibility with final paint system. Provide an acceptable barrier coat or totally remove shop applied paint system when incompatible with system specified, and repaint with specified paint system.
- E. Use painting materials suitable for the intended use and recommended by paint manufacturer for the intended use.
- F. Require that personnel perform work in strict accordance with the latest requirements of OSHA Safety and Health Standards for construction. Meet or exceed requirements of regulatory agencies having jurisdiction and the manufacturer's published instructions and recommendations. Maintain a copy of all Material Safety Data Sheets at the job site of each product being used prior to commencement of work. Provide and require that personnel use protective and safety equipment in or about the project site. Provide respiratory devices, eye and face protection, ventilation, ear protection, illumination and other safety devices required to provide a safe work environment.

### **2.02 ACCEPTABLE MANUFACTURERS**

- A. Subject to compliance with the Specifications, provide products from one of the following manufacturers:
  - 1. Tnemec Company Inc.
  - 2. PPG
  - 3. CARBOLINE

4. Sherwin-Williams
5. International Paints (Akzo Nobel)

## **PART 3 – EXECUTION**

### **3.01 SHOP PAINTING**

- A. Shop prime fabricated steel and equipment with at least one shop coat of prime paint compatible with finish paint system specified. Prepare surface to be shop painted in strict accordance with paint manufacturer's recommendations and as specified. Finish coats may be shop applied, if approved by the Engineer. Package, store and protect shop painted items until they are incorporated into Work. Repair painted surfaces damaged during handling, transporting, storage, or installation to provide a painting system equal to the original painting received at the shop.
- B. Identify surface preparation and shop paints on Shop Drawings. Verify compatibility with field applied paints.
- C. Coordinate shop painting and field coating to ensure item is delivered and field coating occurs within recoat window of shop painted system requirements.

### **3.02 SURFACE PREPARATION**

- A. General
  1. Surfaces to be painted shall be clean and dry, and free of dust, rust, scale, and foreign matter. No solvent cleaning, power or hand tool cleaning shall be permitted unless approved by the Engineer.
  2. Protect or remove, during painting operations, hardware, accessories, machined surfaces, nameplates, lighting fixtures, and similar items not intended to be painted prior to cleaning and painting. Reposition items removed upon completion of painting operations.
  3. Examine surfaces to be coated to determine that surfaces are suitable for specified surface preparation and painting. Report to Engineer surfaces found to be unsuitable in writing. Do not start surface preparation until unsuitable surfaces have been corrected. Starting surface preparation precludes subsequent claim that such surfaces were unsuitable for the specified surface preparation or painting.
  4. Surface preparation shall be in accordance with specifications and manufacturer's recommendations. Provide additional surface preparation, and fill coats where manufacturer recommends additional surface preparation, in addition to requirements of specification.

5. Touch-up shop or field applied coatings damaged by surface preparation or any other activity, with the same shop or field applied coating; even to the extent of applying an entire coat when required to correct damage prior to application of the next coating. Touchup coats are in addition to the specified applied systems, and not considered a field coat.
6. Protect motors and other equipment during blasting operation to ensure blasting material is not blown into motors or other equipment. Inspect motors and other equipment after blasting operations and certify that no damage occurred, or where damage occurred, the proper remedial action was taken.
7. Field paint shop painted equipment in compliance with Color Coding and as approved by Engineer.

B. Metal Surface Preparation

1. Prepare all welds to a minimum NACE weld preparation level "C" per NACE Standard SP0178. Provide additional weld preparation where required by the coating manufacturer. Contractor shall provide NACE SP0178 weld mold visual aids on site for evaluation of all weld preparation.
2. Conform to current The Society for Protective Coatings Standards (SSPC) Specifications for metal surface preparation. Use SSPC-Vis-1 pictorial standards or NACE visual standards TM-01-70 or TM-01-75 to determine cleanliness of abrasive blast cleaned steel.
3. Perform blast cleaning operations for metal when following conditions exist:
  - a. Moisture is not present on the surface.
  - b. Relative humidity is below 80%.
  - c. Ambient and surface temperatures are 5°F or greater than the dew point temperature.
  - d. Painting or drying of paint is not being performed in the area.
  - e. Equipment is in good operating condition.
  - f. Proper ventilation, illumination, and other safety procedures and equipment are being provided and followed.
4. Abrasive blast ferrous metals to be shop primed, or component mechanical equipment in accordance with SSPC-SP5, White Metal Blast.
5. Abrasive blast field prepared ferrous metals in accordance with SSPC-SP10, Near White Metal Blast, where metal is to be submerged, in a corrosive environment, or

in severe service. Provide a 3.0 mil minimum angular anchor profile unless recommended otherwise by the coating manufacturer in writing.

6. Abrasive blast field prepared ferrous metals in accordance with SSPC-SP6 Commercial Blast, where metal is to be used in mild or moderate service, or non-corrosive environment or weathering exposure. Provide a 1.5 mil minimum angular anchor profile unless recommended otherwise by the coating manufacturer in writing.
7. Clean nonferrous metals, copper, or galvanized metal surfaces in accordance to SSPC-SP1, Solvent Cleaning, or give one coat of metal passivator or metal conditioner compatible with the complete paint system. Galvanized metal shall be prepared in accordance with SSPC SP-16. Abrasive blast clean to increase mechanical adhesion in accordance with ASTM D6386, Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting when required by coating manufacturer. Provide a 1.5 mil minimum angular anchor profile unless recommended otherwise by the coating manufacturer in writing.
8. Abrasive blast clean internal and external ductile iron pipe surfaces prior to coating in accordance with NAPF 500-03-04, Surface Preparations Standard for Abrasive Blast Cleaning of Ductile Iron Pipe. Abrasive blast clean internal and external cast ductile iron and cast-iron fitting surfaces in accordance with NAPF-03-05.
9. Prime cleaned metals immediately after cleaning to prevent rusting.
10. Clean rusted metals down to bright metal by abrasive blasting and immediately field primed.

#### C. Concrete Surface Preparation

1. Cure concrete a minimum of 28 days at 75° F before surface preparation, and painting begins. Allow more time at lower temperatures if specified by paint manufacturer.
2. Test concrete for pH and salts using test methods recommended by the paint manufacturer. A minimum of one test per 1000 square feet of area to be coated shall be performed unless approved otherwise by Engineer. Do not begin surface preparation, or painting until acceptable to manufacturer.
3. Moisture content of concrete and masonry surfaces shall conform to manufacturer's recommended limits, and as listed in SSPC-SP13/NACE 6 Section 6 Acceptance Criteria Table 1. Floor surfaces to be coated shall be tested in accordance with ASTM F1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride or as required by the coating manufacturer. Moisture vapor transmission shall not exceed three pounds per 1,000 square feet in a 24-hour period or less if specified

by Coating Manufacturer. Vertical and horizontal overhead surfaces shall be tested in accordance with ASTM F2170 – Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes (relative humidity shall not exceed 80% or as required by the coating manufacturer) or with ASTM D4263 – Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Test Method (test results shall be no moisture present). Engineer or Coating Manufacturer Representative shall specify all test locations. A minimum of one test per 1000 square feet of area to be coated shall be performed unless approved otherwise by Engineer.

4. Prepare concrete surfaces to receive coatings in accordance with NACE 6/SSPC-13 – Joint Surface Preparation Standards and ICRI Technical Guidelines. Remove contaminants, open bugholes, surface voids, air pockets, and other subsurface irregularities using abrasive blasting, shot blasting, water jetting or mechanical abrading. Use dry, oil-free air for blasting operations. Surface texture after blasting shall achieve profile as required by manufacturer or where not defined by manufacturer, profile shall be a minimum ICRI-CSP 5 surface profile. Remove residual abrasives, dust, and loose particles by vacuuming or other approved method.
5. Surface defects, such as hollow areas, bugholes, honeycombs, and voids shall be filled with polymeric or waterborne epoxy cementitious filler compatible with painting system. Complete fill coats may be used in addition to specified painting system and as approved by the Engineer. Fins, form marks, and all protrusions or rough edges shall be removed.
6. Repair existing concrete surfaces which are deteriorated to the point that surface preparation exposes aggregate with fill coats or patching mortar as recommended by paint manufacturer and as directed by the Engineer.
7. Clean concrete of all dust, form oils, curing compounds, oil, tar, laitance, efflorescence, loose mortar, and other foreign materials before paints are applied.
8. To ease coating around outside corners, provide ¾-inch chamfered edges on all new concrete outside corners and grind existing concrete outside corners to a minimum radius of ¾-inch.
9. Unless recommended otherwise by the coating manufacturer, provide ¼" deep by ¼" wide tool cut terminations at 1-inch maximum from all coating edges for anchorage. Provide terminations around all equipment, piping, openings, gates, top and bottom of walls, stop locations of each day's work and overlap onto previously completed work. Transition coating 3-inches onto interior lining of piping except where coating compatibility concerns are noted by coating manufacturer.

10. Apply epoxy or polymeric filler compatible with painting system to all inside corners of areas to be coated with a margin trowel to form a continuous 45-degree cant cove across corners with a minimum dimension of 1.5-inch. Roughen or prepare cured filler as recommended by coating manufacturer for proper coating adhesion.
11. All equipment grouting shall be installed and cured prior to starting coating work. Coating shall be applied over grout up to the edges of all equipment, gates and uninterrupted piping unless specifically noted otherwise.

#### D. Wood

1. Clean wood surfaces free of all foreign matter, with cracks and nail holes and other defects properly filled and smoothed. Remove sap and resin by scraping and wipe clean with rags dampened with mineral spirits.
2. Saturate end grain, cut wood, knots, and pitch pockets with an appropriate sealer before priming.
3. Prime and backprime wood trim before setting in place.
4. After prime coat has dried, fill nailholes, cracks, open joints, and other small holes with approved spackling putty. Lightly sand wood trim prior to applying second coat of paint.

#### E. Castings

1. Prepare castings for painting by applying a brush or a knife-applied filler. Fillers are not to be used to conceal cracks, gasholes, or excessive porosity.
2. Apply one coat of primer with a minimum thickness of 1.2 mils in addition to coats specified. Allow sufficient drying time before further handling.

#### F. Masonry

1. Cure for a minimum of 30 days prior to paint application.
2. Clean masonry surfaces free from all dust, dirt, oil, grease, loose mortar, chalky deposits, efflorescence, and other foreign materials.
3. Test masonry for moisture content. Use test method recommended by paint manufacturer. Do not begin painting until moisture content is acceptable to manufacturer.

#### G. Gypsum Drywall

1. Sand joint compound with sandpaper to provide a smooth flat surface. Avoid sanding of adjacent drywall paper.

2. Remove dust, dirt, and other contaminants.

#### H. Previously-Painted Surfaces

1. Totally remove existing paint when: surface is to be submerged in a severe environment, paint is less than 75% intact, brittle, eroded or has underfilm rusting.
2. Surfaces which are greater than 75% intact require removal of failed paints and then spot primed. Spot priming is in addition to coats specified.
3. Remove surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers.
4. Clean and dull glossy surfaces prior to painting in accordance with the manufacturer's recommendations.
5. Check existing paints for compatibility with new paint system. If incompatible, totally remove existing paint system or apply a barrier coat recommended by the paint manufacturer. Remove existing paints of undetermined origin. Prepare a test patch of approximately 3 square feet over existing paint. Allow test patch to dry thoroughly and test for adhesion. If proper adhesion is not achieved remove existing paint and repaint.

### 3.03 APPLICATION OF PAINT

- A. Apply paint by experienced painters with brushes or other applicators approved by the Engineer, and paint manufacturer.
- B. Apply paint without runs, sags, thin spots, or unacceptable marks.
- C. Apply at rate specified by the manufacturer to achieve at least the minimum dry mil thickness specified. Apply additional coats, if necessary, to obtain thickness.
- D. Special attention shall be given to nuts, bolts, edges, angles, flanges, welds, etc., where insufficient film thicknesses are likely. Stripe paint outside corners and edges in accordance with SSPC PA Guide 11. Stripe painting shall be in addition to coats specified.
- E. Perform thinning in strict accordance with the manufacturer's instructions, and with the full knowledge and approval of the Engineer and paint manufacturer.
- F. Allow paint to dry a minimum of twenty-four hours between application of any two coats of paint on a particular surface, unless shorter time periods are a requirement by the manufacturer. Longer drying times may be required for abnormal conditions as defined by the Engineer and paint manufacturer. Do not exceed manufacturer's recommended drying time between coats.

- G. Suspend painting when any of the following conditions exist:
1. Rainy or excessively damp weather.
  2. Relative humidity exceeds 85%.
  3. General air temperature cannot be maintained at 50°F or above through the drying period, except on approval by the Engineer and paint manufacturer.
  4. Relative humidity will exceed 85% or air temperature will drop below 40°F within 18 hours after application of paint.
  5. Surface temperature of item is within 5 degrees of dewpoint.
  6. Dew or moisture condensation are anticipated.
  7. Surface temperature exceeds the manufacturer's recommendations.
- H. Where application of coating across concrete control joints or expansion joints has the potential to crack, turn coating into joints and caulk joints with a sealant compatible with coating rated for the intended service per Section 07 90 00 – Joint Fillers, Sealants, Caulking.

### **3.04 INSPECTION**

- A. Each field coat of paint will be inspected and approved by the Engineer or his authorized representative before succeeding coat is applied. Tint successive coats so that no two coats for a given surface are exactly the same color. Tick-mark surfaces to receive black paint in white between coats.
- B. Use magnetic dry film thickness gauges and wet film thickness gauges for quality control. Furnish magnetic dry film thickness gauge for use by the Engineer.
- C. Coatings shall pass a holiday detector test.
- D. Determination of Film Thickness: Randomly selected areas, each of at least 107.5 contiguous square feet, totaling at least 5% of the entire control area shall be tested. Within this area, at least 5 squares, each of 7.75 square inches, shall be randomly selected. Three readings shall be taken in each square, from which the mean film thickness shall be calculated. No more than 20 percent of the mean film thickness measurements shall be below the specified thickness. No single measurement shall be below 80 percent of the specified film thickness. Total dry film thickness greater than twice the specified film thickness shall not be acceptable. Areas where the measured dry film thickness exceeds twice that specified shall be completely redone unless otherwise approved by the Engineer. When measured dry film thickness is less than that specified additional coats shall be applied as required.

- E. Holiday Testing: Holiday test painted ferrous metal surfaces which will be submerged in water or other liquids, or surfaces which are enclosed in a vapor space in such structures. Mark areas which contain holidays. Repair or repaint in accordance with paint manufacturer's printed instructions and retest.
  - 1. Dry Film Thickness Exceeding 20 Mils: For surfaces having a total dry film thickness exceeding 20 mils: Pulse-type holiday detector such as Tinker & Rasor Model AP-W, D.E. Stearns Co. Model 14/20, shall be used. The unit shall be adjusted to operate at the voltage required to cause a spark jump across an air gap equal to twice the specified coating thickness.
  - 2. Dry Film Thickness of 20 Mils or Less: For surfaces having a total dry film thickness of 20 mils or less: Tinker & Rasor Model M1 non-destructive type holiday detector, K-D Bird Dog, shall be used. The unit shall operate at less than 75-volts. For thicknesses between 10 and 20 mils, a non-sudsing type wetting agent, such as Kodak Photo-Flow, shall be added to the water prior to wetting the detector sponge.
- F. Paint manufacturer's NACE certified representative shall provide their services as required by the Engineer. Services shall include, but not be limited to, inspecting existing paint, determination of best means of surface preparation, inspection of completed work, and final inspection of painted work 11 months after the job is completed.

### **3.05 PROTECTION OF ADJACENT PAINT AND FINISHED SURFACES**

- A. Use covers, masking tape, other method when protection is necessary, or requested by Owner or Engineer. Remove unwanted paint carefully without damage to finished paint or surface. If damage does occur, repair the entire surface adjacent to and including the damaged area without visible lapmarks and without additional cost to the Owner.
- B. Take all necessary precautions to contain dispersion of abrasive blasting debris and paint to the limits of the work. Take into account the effect of wind and other factors which may cause dispersion of the abrasive blasting debris and paint. Suspend painting operations when abrasive blasting debris or paint cannot be properly confined. Assume all responsibilities and cost associated with damage to adjacent structures, vehicles, or surfaces caused by the surface preparation and painting operations.

### **3.06 PIPING AND EQUIPMENT IDENTIFICATION**

- A. Piping and equipment identification shall be in accordance with Section 40 05 97 – Piping and Equipment Identification Systems.

### **3.07 SCHEDULE OF COLORS**

- A. Match colors indicated. Piping and equipment colors are indicated in Section 40 05 97 – Piping and Equipment Identification Systems. Colors which are not indicated shall be selected from the manufacturer's full range of colors by the Engineer. No variation shall

be made in colors without the Engineer's approval. Color names and numbers shall be identified according to the appropriate color chart issued by the manufacturer of the particular product in question.

### **3.08 WORK IN CONFINED SPACES**

- A. Provide and maintain safe working conditions for all employees. Supply fresh air continuously to confined spaces through the combined use of existing openings, forceddraft fans and temporary ducts to the outside, or direct air supply to individual workers. Exhaust paint fumes to the outside from the lowest level in the contained space. Provide explosionproof electrical fans, if in contact with fumes. No smoking or open fires will be permitted in, or near, confined spaces where painting is being done. Follow OSHA, state/commonwealth, and local regulations at all times.

### **3.09 OSHA SAFETY COLORS**

- A. Paint wall around wall-mounted breathing or fire apparatus with the appropriate safety red color; area not to exceed 2 feet wide by 3 feet high, unless apparatus covers the area. Fire apparatus include fire hoses, extinguisher, and hydrants.
- B. Paint hazardous areas and objects in accordance with OSHA regulations.

### **3.10 VOC REGULATIONS**

- A. Provide paint systems in accordance with local, state, and federal regulations. Where paint systems shown in schedule do not comply substitute equal products with VOC limits which comply with local, state, and federal regulations.

**Table 1: Painting Schedule**

Surface	Application	Painting System and No. of Coats	Product Reference (Table 2)	Total Min. Dry Film Thickness (Mils)
<b>Concrete and Masonry</b>				
Interior masonry and concrete walls and ceilings	All new structures	1 coat sealer 2 coats acrylic epoxy	101 116	75-85 sq.ft./gal. 4-6/coat
Interior masonry and concrete walls in chemical rooms		1 coat sealer 2 coats epoxy polyamide	117 102	60-80 sq.ft./gal. 4-6/coat
Exterior masonry cavity walls on cavity face of inner wythe	All new structures	Dampproofing	See Section 07 11 00	
Exterior below grade if interior is dry	Accessible areas (e.g. pipe galleries, pump rooms, basements, etc.)	Waterproofing	See Section 07 13 50	
Submerged water	Water retaining side of new wall surfaces where opposite side of wall is interior and dry and where indicated	2 coats NSF approved epoxy polyamide Provide filler as required and recommended by manufacturer	105	4-6/coat
Submerged wastewater	"epoxy waterproofing" on drawing	2 coats high solids epoxy Provide filler as required and recommended by manufacturer	119	6-10/coat
Containment Liner <sup>1</sup>	Interior and exterior secondary containment floors, tank supports and walls	2 coats high solids epoxy coating	119	6-10/coat
<b>Metals</b>				
Interior and exterior nonsubmerged (gloss)	All new blowers, pumps, motors and mechanical equipment, piping, etc.	1 coat epoxy polyamide primer 1 coat epoxy polyamide 1 coat aliphatic polyurethane	104 102 115	4-6 4-6 3-5
Interior insulated		1 coat acrylic latex	103	4
Submerged water	All metal piping, and mechanical equipment, etc.	2 coats NSF approved epoxy polyamide	105	4-6/coat
Submerged Wastewater		2 coats high solids epoxy	119	8-10/coat
Steel doors, windows and door frames, steel stairs, monorails, structural steel, misc. metals (steel)		1 coat epoxy polyamide 1 coat aliphatic polyurethane	102 115	5-8 3-4
Aluminum surfaces in contact with concrete		2 coats coal tar	107	26
Shop Primed Structural Steel	Pre-Engineered Buildings	1 tie coat 1 coat epoxy 1 coat epoxy	113 114 120	2-3 3-4 3-4
<b>Other</b>				
Interior: Gypsum Wallboard	All new structures	2 coats acrylic latex matte or satin	103	2-3/coat
Interior: Tar-dipped piping where color is required		1 coats epoxy resin sealer 1 coats epoxy polyamide	112 102	2-3/coat 5-8/coat
PVC Piping		1 coat epoxy polyamide 1 coat aliphatic polyurethane	102 115	5-8 3-4

1 Painting manufacturer shall verify compatibility of containment liner and chemical to be contained. Where incompatible substitute a compatible coating system.

Ref.	System	Purpose	Product			
			Tnemec Series	PPG/AMERON	CARBOLINE	Sherwin-Williams
101	Acrylic filler	Primer-sealer	130-6601	BLOXFIL 4000	Sanitile 100	Cement-Plex 875
102	Epoxy polyamide	Finish coat semi-gloss or gloss	N69	AMERLOCK 2	Carboguard 890	Macropoxy 646
103	Acrylic latex	Sealer	1028/1029	PITT TECH PLUS	Carbocrylic 3359DTM	DTM Acrylic Primer/Finish
104	Epoxy Polyamide – metal	Primer	66	AMERCOAT 385	Carboguard 893SG	Macropoxy 646
105	Epoxy	Primer/Finish	N140	AMERLOCK 2	Carboguard 61/891VOC	Macropoxy 646 PW
106	Coal tar epoxy	Finish high-coat build	46H-413	AMERCOAT 78HB	Bitumastic 300M	Hi-Mil Sher Tar Epoxy
107	Coal tar	Sealer	46-465	AMERCOAT 78HB	Bitumastic 300M	Hi-Mil Sher Tar Epoxy
108	Alkyd-medium oil	Finish coat	2H	DEVGUARD 4308	Carbocoat 8215	Industrial Enamel
109	Alkyd-long oil	Finish coat	1029	DEVGUARD 4308	Carbocoat 8215	Industrial Enamel
110	Epoxy polyamide	Primer	66-1211	AMERCOAT 385	Carboguard 893SG	Macropoxy 646
112	Epoxy polyamide	Sealer	66-1211	AMERCOAT 385	Carboguard 893SG	Macropoxy 920 Pre-Prime
113	Urethane	Barrier coat	530	AMERLOCK SEALER	Rustbond	-
114	Polyamine Epoxy	Intermediate coat	27	AMERLOCK 385	Carboguard 893SG	-
115	Aliphatic Polyurethane	Finish coat	1074 or 1075	AMERCOAT 450 HS	Carbothane 134HG	Acrolon 218HS
116	Acrylic epoxy	Finish coat	113 or 114	AQUAPON WB	Sanitile 255	Water-Based Catalyzed Epoxy
117	Epoxy block filler	Sealer	1254	AMERLOCK 114	Sanitile 500	Kem Cati-Coat HS Epoxy Filler
118	Catalyzed epoxy	Finish coat	84	AMERLOCK 2/400	Carboguard 890	Macropoxy 646
119	High solids epoxy	Finish coat	104	AMERLOCK 400	Carboguard 890	Dura-Plate 235
120	Epoxy	Top coat	N69	AMERLOCK 2/400	Carboguard 890	-

**Table 2: Product Listing**

**END OF SECTION**

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**SECTION 26 05 00**  
**BASIC ELECTRICAL REQUIREMENTS**

**PART 1 – GENERAL**

**1.01 THE REQUIREMENT**

- A. The Contractor shall furnish all labor, materials, tools, and equipment, and perform all work and services necessary for, or incidental to, the furnishing and installation of all electrical work as shown on the Drawings, and as specified in accordance with the provisions of the Contract Documents, and completely coordinate with the work of other trades involved in the general construction. Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation shall be furnished and installed as part of this work. The Contractor shall obtain approved Shop Drawings showing wiring diagrams, connection diagrams, roughing-in, and hook up details for all equipment and comply therewith. All electrical work shall be complete and left in operating condition in accordance with the intent of the Drawings and the Specifications for the electrical work.
  
- B. Reference Section 40 61 13 – Process Control System General Provisions and Division 01 for scope of work details as they relate to the Division 40 Instrumentation and Control (I&C) System Subcontractor.
  
- C. The electrical scope of work for this project primarily includes, but is not limited to, the following:
  - 1. Demolition of electrical equipment and raceway systems as shown on the Drawings.
  - 2. Modifications to existing electrical equipment as shown on the Drawings and as specified herein.
  - 3. Furnish and install low voltage switchgear, switchboards, automatic transfer switches, motor control centers, power panelboards, lighting panelboards, dry-type transformers, and other low voltage electrical power distribution equipment.
  - 4. Furnish and install low voltage motor control equipment including starters and variable frequency drives.
  - 5. Furnish and install aboveground raceway systems including conduit, fittings, boxes, supports, and other pertinent components.
  - 6. Furnish and install underground raceway systems including conduit, fittings, manholes, handholes, and other pertinent components.

7. Furnish and install low voltage wire and cable resulting in a complete and operable electrical system.
  8. Furnish and install lighting systems and wiring devices.
  9. Furnish and install facility lightning protection systems and grounding systems where specified or indicated on the Drawings.
  10. Furnish and install fire alarm systems where specified or indicated on the Drawings.
  11. Furnish and install concrete pads, medium voltage primary underground raceway systems, and other pertinent components as specified in the Local Conditions section herein, as shown on the Drawings, and as otherwise required by the serving electric utility.
  12. Coordination with HVAC subcontractor/installer. The Contractor shall furnish and install all interconnecting conduit, wire, and appurtenances not furnished and installed by the HVAC Subcontractor/installer but required for complete and operable HVAC systems as specified under Division 23.
  13. Coordination with Instrumentation and Control (I&C) System Subcontractor. The Contractor shall terminate all control wiring and power supply wiring at equipment furnished under Division 40. The Contractor shall install all new PLC cabinets supplied under Division 40 and perform final labeling and termination of control wiring to new PLC cabinets.
  14. Other electrical work as specified herein and indicated on the Drawings.
- D. All material and equipment shall be the product of an established, reputable, and approved manufacturer; shall be new and of first class construction; shall be designed and guaranteed to perform the service required; and shall bear the Label of approval of the Underwriters Laboratories, Inc., where such approval is available for the product of the listed manufacturer as approved by the Engineer.
- E. When a specified or indicated item has been superseded or is no longer available, the manufacturer's latest equivalent type or model of material or equipment as approved by the Engineer shall be furnished and installed at no additional cost to the Owner.
- F. Where the Contractor's selection of equipment of specified manufacturers or additionally approved manufacturers requires changes or additions to the system design, the Contractor shall be responsible in all respects for the modifications to all system designs, subject to approval of the Engineer. The Contractor's bid shall include all costs for all work of the Contract for all trades made necessary by such changes, additions or modifications or resulting from any approved substitution.

- G. Furnish and install all stands, racks, brackets, supports, and similar equipment required to properly serve the equipment which is furnished under this Contract, or equipment otherwise specified or indicated on the Drawings.
- H. All electrical components and systems (e.g., conduit and other raceways, freestanding equipment, etc.) and their anchorage, including electrical equipment foundations, shall be designed to resist the controlling load combination of gravity loads, operational forces, wind forces, seismic forces, thermal loads, and any other applicable forces required in accordance with the governing Building Code and Section 01 73 23 – Anchorage and Bracing of Nonstructural Components.

## **1.02 EQUIPMENT LOCATION**

- A. The Drawings show the general location of feeders, transformers, equipment, devices, conduits, and circuit arrangements. Because of the small scale of the Drawings, it is not possible to indicate all of the details involved. The Contractor shall carefully investigate the structural and finish conditions affecting the work and shall arrange such work accordingly. Contractor shall furnish and install such fittings, junction boxes, and accessories as may be required to meet such conditions. The Contractor shall refer to the entire Drawing set to verify openings, special surfaces, and location of other equipment, or other special equipment prior to roughing-in for panels, switches, and other outlets. The Contractor shall verify all equipment dimensions to ensure that proposed equipment will fit properly in spaces indicated.
- B. Where outlets are shown near identified equipment furnished by this or other Contractors, it is the intent of the Specifications and Drawings that the outlet be located at the equipment to be served. The Contractor shall coordinate the location of these outlets to be near the final location of the equipment served whether placed correctly or incorrectly on the Drawings.

## **1.03 LOCAL CONDITIONS**

- A. The Contractor shall examine the site and become familiar with conditions affecting the work. The Contractor shall investigate, determine, and verify locations of any overhead or buried utilities on or near the site, and shall determine such locations in conjunction with all public and/or private utility companies and with all authorities having jurisdiction (AHJs). All costs, both temporary and permanent to connect all utilities, shall be included in the Bid. The Contractor shall be responsible for scheduling and coordinating with the local utility for temporary and permanent services.
- B. In addition, the Contractor shall relocate all duct banks, lighting fixtures, receptacles, switches, boxes, and other electrical equipment as necessary to facilitate the Work included in this project. Costs for such work shall be included in the Bid.
- C. The Contractor is responsible for coordinating all electric utility equipment installations with the serving electric utility. The Contractor shall furnish and install all electric utility

equipment required by the electric utility to be installed by the Contractor whether specifically shown on the Drawings or not.

- D. The Contractor shall furnish and install the following electric utility equipment as a minimum:
1. Concrete transformer/equipment pads constructed in accordance with utility requirements and/or as instructed by the electric utility.
  2. Primary and/or secondary conduits/ductbank and manholes.
  3. Metering equipment cabinets and/or bases, where required by the electric utility, and conduit/wire required from metering cabinet to metering current transformers and potential transformers.
  4. Secondary conductors and terminations.
- E. The electric utility shall furnish and install (and remove, as necessary) the following equipment:
1. Utility poles and pole-mounted equipment, transformer(s), conductors, and terminations. This includes removal, relocation, and/or modifications to the existing overhead utility distribution system as necessary to facilitate the Work included in this project.
  2. Utility Transformers.
  3. Primary conductors and terminations.
- F. The Contractor is responsible for ensuring all electric utility equipment and construction installed by the Contractor is furnished and installed in accordance with the electric utility's design specifications and requirements. The Contractor is fully responsible for coordinating all required work with the electric utility. Any additional required electric utility construction or equipment not specified herein or shown on the Drawings shall be supplied by the Contractor at no additional cost to the Owner.

The contact person at the serving electrical utility is:

Fayetteville Public Works Commission (PWC)  
Mailing: P.O. Box 1089, Fayetteville, NC, 28302  
Shipping: 955 Old Wilmington Rd, Fayetteville, NC 28301

David Deschamps  
Engineering Manager – Electric Systems  
david.deschamps@faypwc.com

Electrical Engineering Department

(910) 223-4514  
electricalengr@faypwc.com

#### **1.04 SUBMITTALS**

- A. In accordance with the procedures and requirements set forth in Section 01 33 00 – Submittal Procedures and the requirements of the individual Specification Sections, the Contractor shall obtain from the equipment manufacturer and submit the following:
  - 1. Shop Drawings
  - 2. Operation and Maintenance Manuals
  - 3. Spare Parts List
  - 4. Proposed Testing Methods and Reports of Certified Shop Tests
  - 5. Reports of Certified Field Tests
  - 6. Manufacturer's Representative's Certification
- B. Submittals shall be sufficiently complete in detail to enable the Engineer to determine compliance with Contract requirements.
- C. Submittals will be approved only to the extent of the information shown. Approval of an item of equipment shall not be construed to mean approval for components of that item for which the Contractor has provided no information.
- D. Some individual electrical Specification Sections may require a Compliance, Deviations, and Exceptions (CD&E) letter to be submitted. If the CD&E letter is required and shop drawings are submitted without the letter, the submittal will be rejected. The letter shall include all comments, deviations, and exceptions taken to the Drawings and Specifications by the Contractor AND Equipment Manufacturer/Supplier. This letter shall include a copy of the applicable Specification Section(s). In the left margin beside each and every paragraph/item, a letter "C", "D", or "E" shall be typed or written in. The letter "C" shall be for full compliance with the requirement. The letter "D" shall be for a deviation from the requirement. The letter "E" shall be for taking exception to a requirement. Any requirements with the letter "D" or "E" beside them shall be provided with a full typewritten explanation of the deviation/exception. Handwritten explanation of the deviations/exceptions is not acceptable. The CD&E letter shall also address deviations and exceptions taken to each Drawing related to the applicable Specification Section(s).
- E. Submit design for all nonstructural electrical components and systems and their anchorage in accordance with the governing Building Code and Section 01 73 23 – Anchorage and Bracing of Nonstructural Components.

## 1.05 APPLICABLE CODES AND REQUIREMENTS

### A. Conformance

1. Unless otherwise noted, all work, equipment, and materials furnished shall conform to the latest available version of the rules, requirements, and specifications of the following:
  - a. Insurance Rating Organization having jurisdiction.
  - b. The serving electrical utility company.
  - c. The currently adopted edition of the National Electrical Code (NEC).
  - d. The National Electric Manufacturers Association (NEMA).
  - e. The Institute of Electrical and Electronic Engineers (IEEE).
  - f. The Insulated Cable Engineers Association (ICEA).
  - g. The American Society of Testing Materials (ASTM).
  - h. The American National Standards Institute (ANSI).
  - i. The requirements of the Occupational Safety Hazards Act (OSHA).
  - j. The National Electrical Contractors Association (NECA) Standard of Installation.
  - k. National Fire Protection Association (NFPA).
  - l. InterNational Electrical Testing Association (NETA).
  - m. All other applicable Federal, State/Commonwealth, and local laws and/or ordinances.
2. All equipment and materials shall be Listed by and shall bear the Label of Underwriter's Laboratories, Incorporated (UL), if the material and equipment is of the type/class inspected by said laboratories.

### B. Nonconformance

1. Any paragraph of requirements in these Specifications or Drawings deviating from the rules, requirements, and specifications of the above organizations shall be invalid and their (the above organizations) requirements shall hold precedent thereto. The Contractor shall be held responsible for adherence to all rules, requirements, and specifications as set forth above. Any additional work or material necessary for adherence will not be allowed as an extra, but shall be

included in the Bid. Ignorance of any rule, requirement, or specification shall not be allowed as an excuse for nonconformity. Acceptance by the Engineer does not relieve the Contractor from the expense involved for the correction of any errors which may exist in the drawings submitted or in the satisfactory operation of any equipment.

C. Certification

1. Where applicable, upon completion of the work, the Contractor shall obtain certificate(s) of inspection and approval from the inspection organization having jurisdiction and shall deliver same to the Engineer and the Owner.

**1.06 PERMITS AND INSPECTIONS**

- A. The Contractor shall reference the General Conditions and Section 01 11 00 – Summary of Work.

**1.07 TEMPORARY LIGHTING AND POWER**

- A. The Contractor shall reference the General Conditions and Section 01 51 00 – Temporary Utilities.

**1.08 TESTS**

- A. Upon completion of the installation, the Contractor shall perform tests for operation, load (Phase) balance, overloads, and short circuits. Tests shall be made with and to the satisfaction of the Owner and Engineer.
- B. The Contractor shall perform all field tests and shall provide all labor, equipment, and incidentals required for testing and shall pay for electric power required for the tests. All defective material and workmanship disclosed shall be corrected by the Contractor at no cost to the Owner. The Contractor shall show by demonstration in service that all circuits and devices are in good operating condition. Test shall be such that each item of control equipment will function not less than five (5) times.
- C. Refer to each individual Specification Section for detailed test requirements.
- D. The Contractor shall complete the installation and field testing of the electrical installation at least two (2) weeks prior to the start-up and testing of any equipment served by that electrical equipment. During the period between the completion of electrical installation and the start-up and testing of all other equipment, the Contractor shall make all components of the Work available as it is completed for their use in performing Preliminary and Final Field Tests.
- E. Before each test commences, the Contractor shall submit a detailed test procedure, and also provide test engineer resume, personnel, and scheduling information for the approval by the Engineer. In addition, the Contractor shall furnish detailed test

procedures for any electrical equipment required as part of the field tests of other systems.

#### **1.09 INFRARED INSPECTION**

- A. Just prior to the final acceptance of a piece of equipment, the Contractor shall perform an infrared inspection to locate and correct all heating problems associated with electrical equipment terminations. The infrared inspection shall be performed by a qualified, independent, third-party testing company, not the Electrical Contractor.
- B. Equipment located in hazardous areas shall be excluded from infrared testing requirements since the equipment in those areas is not intended to be operated while the enclosure is open. The infrared inspection shall apply to all new equipment and existing equipment in non-hazardous areas that is in any way modified under this Contract. All heating problems detected with new equipment furnished and installed under the Scope of this Contract shall be corrected by the Contractor at no additional cost to the Owner. All problems detected with portions of existing equipment modified under this Contract shall also be corrected by the Contractor at no additional cost to the Owner.
- C. Any issues detected with portions of existing equipment that were not modified under this Contract are not the responsibility of the Contractor. Despite the Contractor not being held responsible for these problems, the Contractor shall report them to the Owner and Engineer immediately for resolution.
- D. The infrared inspection report shall include both standard digital photos and infrared (IR) photos positioned side by side. Both the digital and IR photos shall be clear and high quality. Fuzzy, grainy, or poorly illuminated photos are not acceptable. Each IR photo shall be provided with a temperature scale beside it, and an indication of the hot spot temperature in the photo. Reports shall be furnished in a 3-ring binder, with all pages printed in full color, with equipment assemblies separated by tabs.

#### **1.10 PROTECTIVE DEVICE SETTING AND TESTING**

- A. The Contractor shall provide the services of a qualified, independent, third-party testing company using NETA certified technicians to adjust, set, calibrate, and test all protective devices in the electrical system. The company shall not be a subsidiary of the electrical equipment manufacturer. The qualifications of the testing company and resumes of the technicians as well as all data forms to be used for the field testing shall be submitted.
- B. All protective devices in the electrical equipment shall be set, adjusted, calibrated, and tested in accordance with the manufacturers' recommendations, the coordination study, and best industry practice.
- C. Proper operation of all equipment associated with the device under test and its compartment shall be verified, as well as complete resistance, continuity, and polarity tests of power, protective, and metering circuits. Any minor adjustments, repairs, and/or

lubrication necessary to achieve proper operation shall be considered part of this Contract.

- D. All solid state trip devices shall be checked and tested for setting and operation using manufacturers' recommended test devices and procedures.
- E. Circuit breakers and/or contactors associated with the above devices shall be tested for trip and close functions with their protective device.
- F. When completed, the Contractor shall provide a comprehensive report for all equipment tested indicating condition, readings, faults, and/or deficiencies in same. Inoperative or defective equipment shall be brought immediately to the attention of the Engineer.
- G. Prior to placing any equipment in service, correct operation of all protective devices associated with this equipment shall be demonstrated by field testing under simulated load conditions.

#### **1.11 POWER SYSTEM STUDIES**

- A. The Contractor shall provide power system studies performed by a licensed Professional Engineer (P.E.) in accordance with Section 26 05 73 – Power System Studies.

#### **1.12 SCHEDULES AND FACILITY OPERATIONS**

- A. Since the equipment testing required herein shall require that certain pieces of equipment be taken out of service, all testing procedures and schedules shall be submitted to the Engineer for review and approval one (1) month prior to any work beginning. When testing has been scheduled, the Engineer shall be notified 48 hours prior to any work to allow time for load switching and/or alternation of equipment. In addition, all testing that requires temporary shutdown of facility equipment shall be coordinated with the Owner/Engineer so as not to affect proper facility operations.
- B. At the end of the workday, all equipment shall be back in place and ready for immediate use should a facility emergency arise. In addition, should an emergency condition occur during testing, at the request of the Owner, the equipment shall be placed back in service immediately and turned over to Owner personnel.
- C. In the event of accidental shutdown of Owner equipment, the Contractor shall notify Owner personnel immediately to allow for an orderly restart of affected equipment.
- D. Maintaining the operation of these facilities during the duration of the construction period is essential and required. The Contractor shall furnish and install temporary equipment as required to maintain facility operation. Reference Section 01 14 00 – Coordination with Owner's Operations for construction sequencing and specific operational constraint information.

### **1.13 EQUIPMENT, MATERIALS, AND SPARE PARTS HANDLING AND STORAGE**

- A. Materials arriving on the job site shall be stored in such a manner as to keep material free of rust and dirt and to keep material properly aligned and true to shape. Rusty, dirty, or misaligned material will be rejected. Electrical conduit shall be stored to provide protection from the weather and accidental damage. Rigid non-metallic conduit shall be stored on even supports and in locations not subject to direct sun rays or excessive heat. Cables shall be sealed, stored, and handled carefully to avoid damage to the outer covering or insulation and damage from moisture and weather. Adequate protection shall be required at all times for electrical equipment and accessories until installed and accepted. Materials damaged during shipment, storage, installation, or testing shall be replaced or repaired in a manner meeting with the approval of the Engineer. If space heaters are provided in a piece of electrical equipment, they shall be temporarily connected to a power source during storage. The Contractor shall store equipment and materials in accordance with Section 01 55 00 – Contractor Access and Parking.
- B. Spare parts lists, included with the shop drawing submittal for each Section, shall indicate specific sizes, quantities, and part numbers of the items to be furnished. Terms such as "1 lot of packing material" are not acceptable.
- C. Spare parts shall be completely identified with a numerical system to facilitate parts inventory control and stocking. Each part shall be properly identified by a separate number. Those parts which are identical for more than one size, shall have the same parts number.
- D. Spare parts shall be packed in containers suitable for long term storage, bearing labels clearly designating the contents and the pieces of equipment for which they are intended.
- E. Spare parts shall be delivered at the same time as the equipment to which they pertain. The Contractor shall properly store and safeguard such spare parts until completion of the work, at which time they shall be delivered to the Owner.

### **1.14 WARRANTIES**

- A. Unless otherwise specified in an individual Specification Section, all electrical equipment and electrical construction materials shall be provided with a warranty in accordance with the requirements of Section 46 00 00 – Equipment General Provisions and the General Conditions.

### **1.15 TRAINING**

- A. Unless otherwise specified in an individual Specification Section, all training for electrical equipment shall be provided in accordance with the requirements of Section 46 00 00 – Equipment General Provisions.

## **PART 2 – PRODUCTS**

### **2.01 PRODUCT REQUIREMENTS**

- A. Unless otherwise indicated, the materials to be provided under this Specification shall be the products of manufacturers regularly engaged in the production of all such items and shall be the manufacturer's latest design. The products shall conform to the applicable standards of UL and NEMA, unless specified otherwise. InterNational Electrotechnical Commission (IEC) standards are not recognized. Equipment designed, manufactured, and labeled in compliance with IEC standards is not acceptable.
- B. All items of the same type or ratings shall be identical. This shall be further understood to include products with the accessories indicated.
- C. All equipment and materials shall be new, unless indicated or specified otherwise.
- D. The Contractor shall submit proof if requested by the Engineer that the materials, appliances, equipment, and/or devices that are provided under this Contract meet the requirements of Underwriters Laboratories, Inc. with regard to fire and casualty hazards. Documentation indicating Listing and Labeling by Underwriters Laboratories, Inc., will be accepted as meeting this requirement.
- E. Where the above items are Labeled by (bearing the certification mark of) an OSHA Nationally Recognized Testing Laboratory (NRTL) other than UL, and the NRTL is authorized by OSHA to test and certify those items to the same standard(s), then the certification mark of that NRTL shall be considered equivalent to the 'UL' certification mark.

### **2.02 SUBSTITUTIONS**

- A. Unless specifically noted otherwise, any reference in the Specifications or on the Drawings to any article, service, product, material, fixture, or item of equipment by name, make, or catalog number shall be interpreted as establishing the type, function, and standard of quality and shall not be construed as limiting competition. The Contractor, in such cases may use any article, device, product, material, fixture, or item of equipment which in the judgment of the Engineer, expressed in writing, is equal to that specified.

### **2.03 CONCRETE**

- A. The Contractor shall furnish all concrete required for the installation of all electrical work, Concrete shall be Class A unless otherwise specified. Concrete and reinforcing steel shall meet the appropriate requirements of Division 03 of the Specifications.
- B. The Contractor shall provide concrete equipment pads for all free-standing electrical apparatus and equipment located on new or existing floors or slabs. The Contractor shall provide all necessary anchor bolts, channel iron sills, and other materials as required. The exact location and dimensions shall be coordinated for each piece of equipment well

in advance of the scheduled placing of these pads. Equipment pads shall be 4 inches high unless otherwise indicated on the Drawings and shall conform to the Standard Detail for equipment pads shown on the Drawings. Equipment pads shall not have more than 3 inches of excess concrete beyond the edges of the equipment.

## **2.04 RUBBER INSULATING MATTING**

- A. Rubber insulating matting shall be furnished and installed for each piece of electrical equipment that is located indoors and installed under this Contract. Rubber insulating matting shall not be installed outdoors. Matting shall be installed in the front of all equipment and in the rear of equipment that is rear accessible. The mat shall be long enough to cover the full length of the equipment. The mat shall be ¼-inch thick with beveled edges, canvas back, solid type with corrugations running the entire length of the mat. The matting shall meet OSHA requirements and the requirements of ASTM D-178 for Type 2, Class 2 insulating matting. Matting shall be 36 inches wide, minimum. However, matting width shall be no less than the NEC working clearance for the equipment with which it is associated.
- B. Matting shall be provided for the following equipment:
  - 1. PLC/RTU Enclosures
  - 2. Motor Control Centers
  - 3. Switchgear Assemblies
  - 4. Switchboard Assemblies
  - 5. Variable Frequency Drives
  - 6. Panelboards
  - 7. Automatic Transfer Switches
  - 8. Fire Alarm Control Panels
  - 9. Harmonic Correction Equipment

## **PART 3 – EXECUTION**

### **3.01 CUTTING AND PATCHING**

- A. Coordination
  - 1. The Work shall be coordinated between all trades to avoid delays and unnecessary cutting, channeling, and drilling. Sleeves shall be placed in concrete for passage of conduit wherever possible.

B. Damage

1. The Contractor shall perform all chasing, channeling, drilling, and patching necessary to the proper execution of this Contract. Any damage to the building, structure, or any equipment shall be repaired by qualified mechanics of the trades involved at the Contractor's expense. If, in the Engineer's judgment, the repair of damaged equipment would not be satisfactory, then the Contractor shall replace damaged equipment at the Contractor's expense.

C. Existing Equipment

1. Provide a suitable cover or plug for openings created in existing equipment as the result of work under this Contract. For example, provide round plugs in equipment enclosures where the removal of a conduit creates a hole and the enclosure. Covers and plugs shall maintain the NEMA rating of the equipment enclosure. Covers and plugs shall be watertight when installed in equipment located outdoors.

**3.02 EXCAVATION AND BACKFILLING**

- A. The Contractor shall perform all excavation and backfill required for the installation of all electrical work. All excavation and backfilling shall be in complete accordance with the applicable requirements of Division 31.

**3.03 CORROSION PROTECTION**

- A. Wherever dissimilar metals, except conduit and conduit fittings, come into contact, the Contractor shall isolate these metals as required with neoprene washers, nine (9) mil polyethylene tape, or gaskets.

**END OF SECTION**

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**SECTION 26 05 60**  
**LOW VOLTAGE ELECTRIC MOTORS**

**PART 1 – GENERAL**

**1.01 THE REQUIREMENT**

- A. The Contractor shall furnish, install, connect, test, and place in satisfactory operation all low voltage electric motors indicated on the Drawings, specified herein and in the individual equipment Sections, and/or required for proper operation. All appurtenances required for the installation of low voltage electric motors shall be furnished and installed by the Contractor. All motors required for this Contract shall comply with this Section unless otherwise noted.
- B. Low voltage motors are for the purposes of this Specification are defined as motors rated for operation on nominal systems of up to 600 volts.
- C. Reference Section 26 05 00 – Basic Electrical Requirements and Section 09 90 00 – Painting.

**1.02 CODES AND STANDARDS**

- A. All equipment and materials shall be Listed by and shall bear the Label of Underwriter's Laboratories, Incorporated (UL).
- B. Motors and related accessories shall be designed, manufactured, and/or Listed to the following standards as applicable:
  - 1. American Bearing Manufacturer's Association (ABMA):
  - 2. American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE):
    - a. IEEE 112 – Standard Test Procedure for Polyphase Induction Motors and Generators.
    - b. IEEE 841 – Standard for Petroleum and Chemical Industry--Premium-Efficiency, Severe-Duty, Totally Enclosed Squirrel Cage Induction Motors from 0.75 kW to 370 kW (1 hp to 500 hp).
    - c. ANSI/IEEE C62.11 – Standard for Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV).
  - 3. National Electrical Manufacturers Association (NEMA):
    - a. NEMA MG 1 – Motors and Generators.

- b. NEMA MG 2 – Safety Standard for Construction and Guide for Selection, Installation and Use of Electric Motors and Generators.
- 4. National Fire Protection Association (NFPA):
  - a. NFPA 70 – National Electrical Code (NEC).
- 5. Underwriters Laboratories (UL):
  - a. UL 547 – Standard for Safety Thermal Protectors for Motors.
  - b. UL 674 – Standard for Safety Electric Motors and Generators for Use in Hazardous (Classified) Locations.
  - c. UL 1004-1 – Standard for Rotating Electrical Machines - General Requirements.
  - d. UL 1004-3 – Standard for Thermally Protected Motors.
  - e. UL 1004-8 – Standard for Inverter Duty Motors.
- 6. US Department of Energy (DoE):
  - a. 10 CFR Part 431 – Energy Efficiency Program for Certain Commercial and Industrial Equipment (Including 2016 Motor Efficiency Rule Updates).

### **1.03 SUBMITTALS**

- A. In accordance with the procedures and requirements set forth in the General Conditions and Section 01 33 00 – Submittal Procedures, the Contractor shall obtain from the equipment manufacturer and submit the following:
  - 1. Shop Drawings.
  - 2. Spare Parts List.
  - 3. Proposed Testing Methods and Reports of Certified Shop and Field Tests.
  - 4. Operation and Maintenance Manuals.
- B. Each submittal shall be identified by the applicable Specification Section.

### **1.04 SHOP DRAWINGS**

- A. Each submittal shall be complete in all respects, incorporating all information and data listed herein and all additional information required for evaluation of the proposed equipment's compliance with the Contract Documents.

- B. Partial, incomplete, or illegible submittals will be returned to the Contractor without review for resubmittal.
- C. Individual shop drawings for electric motors shall be submitted unless submitted as a part of the shop drawings for the driven equipment.
- D. Shop drawings shall identify electric characteristics and design, mechanical construction, manufacturer's name, type, and pertinent specifications for the use intended, along with the name of the equipment to be driven.
- E. Shop drawings for electric motors shall include, but not be limited to:
  - 1. Motor specifications and data sheets identifying all materials used and methods of fabrication
  - 2. Motor outline, dimensions, weight, and mounting position
  - 3. UL Listing and other applicable design/testing agency certifications (e.g., NEMA)
  - 4. Manufacturer's type and frame designation
  - 5. Motor enclosure type
  - 6. Full load power (HP) rating
  - 7. Service factor
  - 8. Rated speed (RPM) and number of poles
  - 9. Rated voltage, frequency, and number of phases
  - 10. Rated-load amperes
  - 11. NEMA MG 1 locked rotor code letter (locked-rotor kVA per horsepower) or locked rotor amperes
  - 12. Motor winding insulation system designation (class) and description
  - 13. Maximum continuous ambient temperature rating (°C) under the usual service conditions specified herein
  - 14. Temperature rise (°C) of the stator windings at full load operation under the usual service conditions specified herein
  - 15. For hazardous (classified) location motors, the hazard designation(s) (Class, Division, and Group) and temperature code (T-code)
  - 16. NEMA design letter

17. NEMA nominal efficiency
18. Power factor
19. Efficiency at 1/4, 1/2, 3/4, and full load
20. Power factor at 1/4, 1/2, 3/4, and full load
21. Bearing type/size
22. Rated torque at 100% load (ft-lbs), locked rotor torque (as % of rated), and breakdown torque (as % of rated)
23. For motors with field-lubricated (not sealed) bearings, datasheets for the required lubricant (oil/grease) product(s)
24. For vertical motors, inclined motors, and/or other applications where the driven equipment applies significant thrust/radial loads to the motor shaft (e.g., belt drives), provide bearing thrust/radial load ratings and any other applicable information indicating the motor bearings and motor assembly are suitable for use with the driven load.
25. Wiring diagrams for devices/accessories such as space heaters, temperature devices, vibration devices, and shaft grounding rings
26. For polyphase (three-phase) motors 250HP and larger, provide the following additional information:
  - a. Rotor inertia (i.e., "WK<sup>2</sup>" or "WR<sup>2</sup>") (lb-ft<sup>2</sup>)
  - b. Fault contribution parameters: X/R ratio and per-unit subtransient reactance (X<sub>d</sub>)
27. Stall time rating (i.e., "safe stall" or "locked rotor damage" time). For polyphase (three-phase) induction motors exceeding 500HP and/or the standard NEMA MG 1 defined load inertia (Wk<sup>2</sup>) limits, provide thermal damage curve plots indicating the thermal limits of the motor. Where available, stall time ratings and/or thermal damage curve plots shall be provided for both "cold" starts and "hot" starts.
28. For inverter duty motors, applicable ratings adjusted for inverter operation (e.g., HP, service factor, hazardous location operation, temperature rise and/or T-code, etc.). Rated speed range(s) shall also be provided (expressed as an operating frequency range and/or speed turndown ratio). Where motors have separate speed range ratings for variable torque (VT) and constant torque (CT) applications, both ratings shall be provided.

29. Where specified in the individual equipment Specification and for polyphase (three-phase) motors 250HP and larger, submit a Compliance, Deviations, and Exceptions (CD&E) letter. If the shop drawings are submitted without this CD&E letter, the submittal will be rejected. The letter shall include all comments, deviations and exceptions taken to the Drawings and Specifications by the Contractor AND Equipment Manufacturer/Supplier. This letter shall include a copy of this Specification Section. In the left margin beside each and every paragraph/item, a letter "C", "D", or "E" shall be typed or written in. The letter "C" shall be for full compliance with the requirement. The letter "D" shall be for a deviation from the requirement. The letter "E" shall be for taking exception to a requirement. Any requirements with the letter "D" or "E" beside them shall be provided with a full typewritten explanation of the deviation/exception. Handwritten explanation of the deviations/exceptions is not acceptable. The CD&E letter shall also address deviations and exceptions taken to each Drawing related to this Specification Section.

- F. The aforementioned data shall also be verified after manufacture and shall be included with the information to be furnished in the operation and maintenance manuals specified.
- G. The shop drawing information shall be complete and organized in such a way that the Engineer can determine if the requirements of these Specifications are being met. Copies of technical bulletins, technical data sheets from "soft-cover" catalogs, and similar information which is "highlighted" or somehow identifies the specific equipment items the Contractor intends to provide are acceptable and shall be submitted.

#### **1.05 OPERATION AND MAINTENANCE MANUALS**

- A. The Contractor shall submit operation and maintenance manuals in accordance with the procedures and requirements set forth in the General Conditions and Division 01. Where motors are furnished as part of a package with the driven equipment, the motor O&M information shall be included as part of the manuals for equipment package.

#### **1.06 SPARE PARTS**

- A. All spare parts as recommended by the equipment manufacturer shall be furnished to the Owner by the Contractor.
- B. For motors with shaft grounding rings: one (1) set of replacement brushes (or applicable consumable part for the grounding ring product furnished) for every three (3) shaft grounding rings of the same type/size furnished under the project scope. Where individual replacement parts are not available, one complete grounding ring kit/set shall be furnished in the same quantity described above.

- C. For each non-submersible motor 250HP and larger, furnish the following additional spares:
  - 1. One (1) complete set of spare bearings and upper/lower bearing liner halves (as applicable) for the drive end (DE) and non-drive end (NDE) bearings. For inverter duty motors, the spare DE and/or NDE bearing(s) shall be insulated where applicable to match the original bearing(s).
  - 2. For motors with oil-lubricated bearings: one (1) complete set of oil rings for front and rear inboard and outboard seals.
  - 3. For motors with bearing RTDs: one (1) bearing temperature detector (RTD).
  - 4. For motors with vibration sensors/switches: one (1) vibration sensor/switch.
  - 5. One (1) set of special tools which may be needed.
- D. Reference Section 26 05 00 – Basic Electrical Requirements for spare parts delivery and handling requirements.

#### **1.07 IDENTIFICATION**

- A. Motors shall be furnished with nameplate(s) as specified herein.
- B. The motor manufacturer's nameplate shall be engraved, embossed, or stamped on a stainless steel sheet and fastened to the motor frame with No. 4 or larger oval head stainless steel screws or drive pins. Printed or laser-etched nameplates are not acceptable.
- C. Nameplates shall include as a minimum, Items 3 through 21 listed in Article 1.04-E herein in addition to that required by the NEC and NEMA standards. The nameplate shall be positioned to be readily visible for inspection as installed in the facility (not obscured from view due to orientation or the presence of other assemblies).
- D. Additional nameplate information shall be included and/or a second/auxiliary nameplate shall be affixed to the motor which shall include all additional information required for the following:
  - 1. Inverter duty motor applications in accordance with NEMA MG 1 Part 31.
  - 2. Hazardous (classified) location motor applications in accordance with NEC Article 500.8.
  - 3. Stall time rating (in seconds) for motors which exceed the standard horsepower and/or driven load inertia limits defined in NEMA MG 1. Reference the Design Requirements section herein for more information regarding motor thermal limits and stall time ratings.

4. Other special applications where additional nameplate information is required.

## 1.08 DESIGN REQUIREMENTS

- A. Motors shall be designed, constructed, tested, and Listed/Labeled in accordance with the latest applicable editions of the NEC and standards of ANSI, IEEE, and NEMA (including, but not limited to, MG 1 and MG 2), UL, and to the requirements specified herein.
- B. Motor ratings shall be based on continuous operation. Output torque and speed characteristics of each motor shall be suitable to operate the driven equipment through the full range of acceleration and operating load conditions without exceeding the nameplate current rating and/or temperature rise.
- C. The rating of the motors offered shall in no case be less than the horsepower shown on the Drawings or elsewhere specified. It should be noted that the motor sizes specified or shown on the Drawings are the minimum motor sizes required to operate the specific driven equipment. Higher rated motor sizes, if determined to be necessary based upon the actual driven equipment submitted and approved, may be substituted if approved for use by the Engineer. In such cases, protective devices, motor starters, disconnect switches, conduits/wire, and other necessary equipment and appurtenances shall be furnished and installed for the actual motor sizes required at no additional cost to the Owner.
- D. Usual Service Conditions
  1. Motor ratings shall be coordinated with the ambient environmental conditions and electrical service conditions of the specific project site and application(s).
  2. Air-cooled motor ratings (e.g., temperature rise, service factor, etc.) shall, at a minimum, be based upon operation at the "usual service conditions" as defined in NEMA MG 1 for the specific type of motor, and as specified herein. Water-cooled motors and other uncommon or special motor types/configurations may be subject to other applicable service conditions.
  3. The usual ambient environmental conditions shall be as follows:
    - a. Maximum altitude: 3300ft (1000m)
    - b. Minimum ambient operating temperature: -15 degrees C for motors with grease lubricated bearings or 0 degrees C for motors with oil lubricated bearings
    - c. Maximum ambient operating temperature: 40 degrees C
  4. For operation at altitudes above 3300ft (1000m), or where ambient temperatures exceed 40 degrees C, motors shall have the maximum ambient temperature

rating, service factor, temperature rise rating, and/or other applicable ratings adjusted per applicable NEMA MG 1 requirements. Where motors are installed within housings or enclosures where higher interior temperatures (above the ambient temperature rating) are likely to occur, motor ratings shall be similarly adjusted.

5. The usual electrical service conditions shall be as follows:
  - a. Voltage variation (maximum): +/-10 percent of rated (except as noted in item 'c')
  - b. Frequency variation (maximum): +/-5 percent of rated (except as noted in item 'c')
  - c. Combined voltage and frequency variation (maximum): 10 percent (note that this is more restrictive than the individual variation allowance in item 'a' or 'c')
  - d. Voltage unbalance (maximum): 1 percent
- E. Motor selection with respect to the driven machine shall be such that the machine requirements do not exceed the motor's maximum rating(s) at 1.0 service factor (adjusted for ambient temperature, enclosure, altitude, and electrical service when not operating within the defined usual service conditions herein).
- F. Motor Thermal Limits and Stall Time
  1. Polyphase (three-phase) motors rated up to 500HP and driving loads within NEMA MG 1 defined load inertia ( $Wk^2$ ) limits shall be designed for a stall time (i.e., "safe stall" or "locked rotor damage" time) of not less than 12 seconds when the motor is initially at normal operating temperatures.
  2. Polyphase (three-phase) induction motors exceeding 500HP and/or driving loads that exceed the standard NEMA MG 1 defined load inertia ( $Wk^2$ ) limits shall be sized/rated to start and drive the driven equipment load without exceeded the thermal limits of the motor (i.e., the thermal limit or "damage" curves/points) during both "cold" and "hot" starts.
- G. Motors specified or shown on the Drawings for operation with variable frequency drives (VFD) shall be inverter duty rated. Motors shall only be considered inverter duty rated if they meet all of the requirements for NEMA MG 1 Part 31. Inverter duty motor selection and ratings shall be closely coordinated with the torque (e.g., variable or constant torque) and operating speed (e.g., operating frequency range and/or turndown speed ratio) characteristics of the driven equipment.

## H. Performance

1. Unless otherwise specified or shown on the Drawings, or as required by the dynamic characteristics of the load (as determined by the manufacturer of the machine to be driven), three-phase motors shall have the torque and locked rotor current characteristics as designated in NEMA MG 1 for NEMA Design B motors (or NEMA Design A if approved for use by Engineer).
2. Unless otherwise specified or shown on the Drawings, or as required by the dynamic characteristics of the load (as determined by the manufacturer of the machine to be driven), single-phase motors shall have the locked rotor current characteristics as designated in NEMA MG 1 for NEMA Design N motors.
3. Motors shall be designed to withstand the starting voltage/method (e.g., full-voltage, reduced voltage, variable frequency, etc.) as specified or shown on the Drawings. Motors shall be designed to output 100 percent of nameplate horsepower under continuous duty service without exceeding the temperature rise specified herein when controlled by the actual starter/controller or variable frequency drives (VFD) furnished.
4. Unless otherwise specified or shown on the Drawings, electric motor service factors shall be in accordance with NEMA MG 1 as follows:
  - a. Non-inverter duty motors: 1.15 service factor
  - b. Inverter duty motors: 1.0 service factor
  - c. Service factors for small single-phase motors may vary from the values shown herein, where applicable
5. Reference Article 2.03 herein for power factor and efficiency requirements.

## **PART 2 – PRODUCTS**

### **2.01 MANUFACTURERS**

- A. The equipment covered by this Specification is intended to be standard equipment of proven performance as manufactured by reputable concerns. Equipment shall be designed, constructed, and installed in accordance with the best practices of the trade, and shall operate satisfactorily when installed as shown on the Drawings.
- B. Electric motors shall be manufactured by Baldor/Reliance (ABB); Nidec Motors; Toshiba Industrial and Power Systems, Inc.; Siemens Energy & Automation, Inc.; TECO Westinghouse; GE Industrial Motors (Wolong); or approved equal.

## 2.02 MATERIALS AND CONSTRUCTION

### A. Motor Types

1. These requirements are intended to establish standards for the most common types of motors applicable to the Work and may not exhaustively cover all possible motors. For applications where motors must deviate from these standard types, the Contractor shall submit the selected motor data for Engineer approval.
2. In all cases, motors shall be of the type, design, ratings, and construction in accordance with the applicable NEMA MG 1 Section(s) and Part(s).
3. Unless otherwise specified or shown on the Drawings, motors shall be one of the following types:
  - a. Three-phase (polyphase) motors: Squirrel-cage induction type motor, NEMA Design B, designed for operation on a nominal 480 volts, 3-phase, 60Hz alternating current system. NEMA Design A motors may be permitted with Engineer approval. Three-phase motors shall have the numbers of poles as required for the operating speed of the driven equipment.
    - 1) Unless otherwise specified or shown on the Drawings, all motors 1/4 horsepower or larger shall be the standard three-phase type as specified herein.
    - 2) Motors designated by NEMA MG 1 as "large machines" due to a non-standard high horsepower or low speed (RPM) rating shall be in accordance with the applicable Part(s) of NEMA MG 1 Section III – Large Machines.
  - b. Single-phase motors: Capacitor-start or repulsion-start induction type motor, NEMA Design N, designed for operation on a nominal 120 through 240 volts (specific voltage as specified or shown on the Drawings), 1-phase, 60 Hz alternating current system. All single-phase motors shall be completely equipped with all necessary auxiliary components for starting and labeled as "Thermally Protected."
    - 1) Unless otherwise specified or shown on the Drawings, all motors smaller than 1/4 horsepower shall be the standard single-phase type as specified herein.
    - 2) Single-phase fan motors smaller than 1/4 horsepower may be split-phase or shaded-pole type.
  - c. Definite-purpose motors and/or other special types: Specialized equipment requiring a motor drive with unusual characteristics shall be equipped with a definite-purpose motor to meet the necessary requirements.

## B. Construction

1. Frames, mounting means, and shafts shall meet NEMA Standards for the horsepower, RPM, and enclosure selected.
2. Unless otherwise specified in the individual equipment Specifications, motors shall have cast iron or steel frames with cast iron end plates. Fan-cooled motors shall have cast iron or fabricated steel fan covers.
3. Unless otherwise specified in the individual equipment Specifications, enclosures shall be selected as specified herein and (where separate from the frame) shall not be of aluminum or non-metallic (e.g., plastic or fiberglass) construction.
4. Motors weighing more than 50 pounds shall be equipped with at least one lifting eye. Motors shall be capable of being lifted in one piece and fully assembled when shipped.
5. All bolts and lifting hardware shall be corrosion resistant.
6. Motors for use in general applications shall have a manufacturer's standard shop machinery finish, consisting of a rust-resisting priming coat of zinc chromate and a finish coat of alkyd machinery enamel. Reference Section 09 90 00 – Painting. Motors for use in special applications/environments (e.g., submersible motors, severe duty motors, hazardous location motors, etc.) shall have special coatings (e.g., epoxy) suitable for duty in those applications/environments.
7. Motors used with belt drives shall have sliding bases to provide for belt take up and shall be provided with appropriate bearings as specified in the Bearings section herein for the radial loads associated with the application.
8. Motors for inclined mounting applications (e.g., inclined screw pumps) shall be suitable for inclined mounting and shall be provided with appropriate bearings as specified in the Bearings section herein for the thrust and/or radial loads associated with the application.
9. Horizontal motors shall not be installed in vertical applications where subjected to external thrust loads.
  - a. Where specified for vertical applications, vertical hollow shaft (VHS) or vertical solid shaft (VSS) motors shall be furnished.
  - b. VHS and VSS motors shall be designed to carry the motor's, machine/pump's, and associated equipment's full thrust loads, and shall be provided with appropriate bearings as specified in the Bearings section herein.

- c. VHS and VSS motors shall be fitted with non-reversing ratchet (NRR) assemblies where required by the equipment Specifications.
  - d. Vertical adjustment of VHS motors shall be provided by means of a lockable nut at the top of the shaft.
  - e. Vertical adjustment of VSS motors shall be provided by means of an adjustable shaft-mounted external coupling.
10. Rotors shall be statically and dynamically balanced. The rotor shall be fabricated of high grade electrical sheet steel laminations or copper/copper alloy adequately fastened together and to the shaft.
  11. Stator windings and end turn connections shall be fully braced to withstand all mechanical, electrical, and thermal stresses.
  12. The shaft shall be made of high grade machine steel or steel forging and of size and design adequate to withstand the load stresses.

#### C. Enclosures

1. Unless otherwise specified or shown on the Drawings, motors located in non-hazardous (unclassified) locations shall be the totally-enclosed fan-cooled (TEFC) type.
  - a. Vertically-oriented fan-cooled motors located outdoors shall be provided with a drip cover over the fan end to prevent accumulation of precipitation.
  - b. Motors shall be provided with two (2) 1/4-inch drain holes drilled through the bottom of the frame (or lowest location), which allows complete drainage of the frame.
  - c. Fan-Cooled inverter duty motors controlled by a variable frequency drive (VFD) shall be designed to operate down to the specified turndown speed range without the need for an auxiliary electric cooling fan.
    - 1) Where sufficient cooling is not possible at the required turndown speed range, or where otherwise specified, these motors shall instead be a totally-enclosed blower-cooled (TEBC) type that utilize an external electric fan/blower (instead of a shaft-driven fan) to ensure proper cooling of the motor at low speeds.
  - d. Where required for other specific applications (e.g., for certain dry pit submersible pumps without integrated process liquid cooling), motors shall instead be a totally-enclosed blower-cooled (TEBC) type that utilize an external electric fan/blower (instead of a shaft-driven fan) to ensure proper cooling of the motor in open air.

- e. Electric motor cooling fans, where required for TEBC motors, shall be suitable for 120VAC, 60Hz, 1-phase operation. Electric motor cooling fans shall be coordinated with the motor starter/controls for proper on/off and/or time delay operating in accordance with the motor manufacturer's requirements.
2. Unless otherwise specified or shown on the Drawings, motors located in hazardous (classified) locations shall be totally-enclosed types suitable for the specific Class, Division, and Group for the application. The specific totally-enclosed type shall be TEFC, unless a special application consideration or hazardous location requirement necessitates the use of another type.
- a. Motors located in Class I or II, Division 1 hazardous locations shall be UL-674 Listed and Labeled. These motors shall be explosion-proof for Class I hazardous locations or dust-ignition-proof for Class II hazardous locations.
  - b. Motors located in Class I or II, Division 2 hazardous locations shall be in accordance with one of the following (this requires careful coordination with the specific application, motor accessory types to be furnished, and motor and accessory operating/surface temperatures):
    - 1) Be Class I or II, Division 1 hazardous location motors as specified herein.
    - 2) Be identified for use in Class I, Division 2 hazardous locations (not applicable to Class II, Division 2 hazardous locations).
    - 3) Be a non-explosion-proof enclosed motor where permitted in accordance with NEC Article 501.125(B) for Class I, Division 2 hazardous locations
    - 4) Be a non-dust-ignition-proof enclosed motor where permitted in accordance with NEC Article 502.125(B) for Class II, Division 2 hazardous locations.
  - c. Unless prohibited by the NEC (e.g., Class II, Division 2 location motors are not permitted to have external openings in accordance with NEC Article 502.125(B)), hazardous (classified) location motors shall be provided with a U.L. Listed breather/drain approved for the location. The breather/drain shall prevent the entrance of contaminants while allowing moisture to drain out of the motor.
3. Where specified in the individual equipment Specification, motors shall be severe duty for operation in harsh/chemical environments. Severe duty motors shall be manufactured in accordance with, and Labeled as, IEEE 841 severe duty motors. The IEEE 841 Labeling shall be in addition to the other motor design, construction, and performance requirements herein for the respective motor.

#### D. Insulation

1. Winding insulation shall be as specified for each particular type or class of motor. The insulation system shall provide a high dielectric strength, long life covering for the windings which may be required to operate in a continually damp, corrosive, and/or chemically contaminated environment. The insulation shall be resistant to attack by moisture, acids, alkalis, abrasives, and mechanical and thermal shock. Leads shall be sealed with a non-wicking, non-hydroscopic insulation material.
2. Motor insulation resistance may be checked at any time after delivery to the job site or during the warranty period. Encapsulated motor stators may be subjected to insulation testing while completely submerged in water. Any motor not meeting the requirements specified herein will be rejected and shall be promptly replaced at no cost to the Owner.
3. Unless otherwise specified, insulation for three-phase motors shall be as follows:
  - a. Non-inverter duty motors shall be furnished with a Class F insulation system. Temperature rise shall be limited to that for Class B insulation while operating under the usual conditions specified herein.
  - b. Inverter duty motors shall be furnished with a Class F insulation system. Temperature rise shall be limited to that for Class B insulation while operating under the usual conditions specified herein.
  - c. All motors 250 horsepower and larger shall have stator windings vacuum impregnated with a polyester insulation compound.
4. Unless otherwise specified, insulation for single-phase motors shall be as follows:
  - a. Insulation shall be a Class B insulation system, minimum.

#### E. Terminal Boxes

1. Motors shall be furnished with a cast iron or heavy gauge steel terminal box and cover, with neoprene gaskets between the frame and the box and between the box and its cover. The box shall be diagonally split from top to bottom and shall be completely rotatable 360-degrees in 90-degree increments.
2. Motor terminal boxes shall be of sufficient size to accommodate the required quantity and size of conduit(s) to be terminated. This shall be carefully coordinated when large conduits and/or multiple/parallel sets of conduits must be terminated. Boxes shall be provided with conduit hub type fittings to permit threaded conduit connections.
3. Terminal boxes shall be sized to accommodate accessory equipment such as motor differential current transformers, capacitors, etc., where required. Where

certain types of accessories are specified which require separate termination provisions, a separate accessory terminal box shall be furnished in addition to the main terminal box. Reference the Accessories section herein.

4. NEMA ratings of the terminal boxes shall be suitable for the application. Motors located in hazardous (classified) locations shall be furnished with terminal boxes suitable for the specific Class, Division, and Group for the application.
5. Terminal boxes for horizontal motors shall be located on the left-hand side when viewing the motor from the drive shaft end and shall be so designed that conduit entrance can be made from above, below, or either side of the terminal box.
6. A grounding lug(s) shall be provided inside the terminal box.
7. All motors shall be provided with factory-installed one-hole terminations (e.g., ring terminals) on the ends of all motor leads. For fine-stranded motor leads (with other than Class B conductor stranding), terminations shall be identified for use with fine-stranded conductors and shall be the irreversible compression type.

#### F. Bearings

1. The bearing requirements herein are intended to establish minimum requirements for most motor applications, but do not exhaustively cover all possible motor and driven-equipment arrangements and operating conditions. All bearings shall be selected for suitability with the operating conditions and the type (e.g., centrifugal, radial, axial/thrust, etc.) and magnitude of loads associated with the specific motor-load combinations. Where the requirements herein may not be suitable for a specific application due to operating speed, bearing temperature limitations, environmental conditions, or other factors, the Contractor shall coordinate the requirements with the motor and driven equipment manufacturers and shall submit alternate bearing configurations for Engineer approval.
2. Unless otherwise specified or shown on the Drawings, bearings shall have a minimum ABMA L-10 life of 100,000 hours.
3. Unless otherwise specified, shown on the Drawings, or required due to the application (e.g., operating speed, bearing temperature, etc.), all motor bearings shall be grease-lubricated anti-friction type. Unless specified as the sealed type, grease-lubricated bearings shall be the feed type and shall include conveniently located grease fittings and drain plugs. Fittings and drains shall be arranged so as to be accessible when the motor and driven equipment are installed. A means of preventing bearings from becoming over-greased shall be provided.
  - a. Oil-lubricated bearings, where applicable, shall be provided with 90-degree fittings and drain valves on the oil drain ports for improved maintainability/serviceability. When required due to motor speed, bearing size, or other factors, provisions shall be made for forced lubrication. The oil

supply shall be supplied with motor. In addition, oil rings and an adequate oil reservoir in the bearing housings shall be provided to permit orderly shutdown of the motor in the event of failure of the forced feed lubrication system.

4. Inverter duty motors where shaft grounding rings (SGR) are required (reference the Accessories section herein) shall be provided with an electrically insulated bearing at the opposite end (typically the NDE bearing) from the SGR. Insulated bearings shall have an electrically insulating ceramic coating with a dielectric breakdown voltage rating of 1000V. Inverter duty motors not provided with SGR shall be provided with electrical insulated bearings at both ends.
5. Unless otherwise specified or shown on the Drawings, three-phase horizontal motors in direct drive or coupled arrangements shall be provided with single-row deep groove ball bearings on the drive end (DE) and non-drive end (NDE).
6. Unless otherwise specified or shown on the Drawings, three-phase horizontal motors in belt drive arrangements shall be provided with cylindrical, spherical, or tapered roller bearings for high axial loading on the drive end (DE) and single-row deep groove ball bearings on the non-drive end (NDE).
7. Unless otherwise specified or shown on the Drawings, vertical motors (including VHS and VSS motors) shall be provided with one of the following:
  - a. Grease or Oil-lubricated angular-contact ball/tandem angular-contact ball/spherical roller thrust bearings on the (upper) non-drive end (NDE) and single-row deep groove ball radial guide bearings on the (lower) drive end (DE).
  - b. For applications with very high thrust loads (which cannot meet the required L-10 life), hydrodynamic or hydrostatic fluid film plate-type thrust bearings and oil-lubricated sleeve guide bearings shall be provided. The oil sump shall be designed to maintain a maximum 40°C temperature rise. Motors/bearings shall be designed for the necessary upthrust.
8. Three-phase motors in direct, coupled, or belt drive inclined mounting arrangements shall be provided with the specific bearing types/combinations required for the specific mounting and drive geometry and loading. These arrangements require careful bearing selection for suitability and long life under the design operating conditions. Bearing lubrication type and method shall be subject to Engineer approval.
9. Unless otherwise specified or shown on the Drawings, single-phase motors shall be provided with grease-lubricated sealed ball bearings, lubricated for 10 years of normal use.

## G. Accessories

1. All motor accessories shall be coordinated with the motor design, construction, and enclosure type, and with respect to any requirements associated with the specific application and all applicable codes and standards. Special care shall be exercised in the selection and ratings of motor accessories specified herein and elsewhere for use in motors located in hazardous (classified locations).
2. Shaft Grounding Rings (SGR)
  - a. Externally-mounted shaft grounding rings (SGR) shall be provided to protect motors controlled by VFDs against motor shaft and bearing currents, with the following exceptions:
    - 1) Motors located in hazardous (classified) locations
    - 2) Motors rated less than one (1) horsepower
    - 3) Submersible motors
  - b. SGR shall be coordinated with the motor and bearing configuration to suit the specific application. Typically, SGR shall be installed on the drive end (DE) of the motor. Reference the Bearings section herein for additional requirements for bearings when SGR are provided.
3. Motor Space Heaters (MSH)
  - a. Unless otherwise specified or shown on the Drawings, motors rated 10 horsepower or greater that are located outdoors or in indoor wet locations shall be furnished with motor space heaters (MSH) for condensation prevention, with leads brought out to the motor terminal box.
  - b. MSH shall be suitable for 120VAC operation and shall be of sufficient wattage to maintain the internal temperature of the motor at least 5 degrees C above the ambient temperature when the motor is not running, and shall meet the following surface temperature requirements:
    - 1) In non-hazardous (unclassified) locations, MSH shall have a maximum surface temperature of up to 200 degrees C.
    - 2) In Class I hazardous (classified) locations, MSH shall have a maximum surface temperature that does not exceed 80% of the autoignition temperature (AIT) of the gas or vapor to be encountered in accordance with the applicable requirements of NEC Articles 500 and 501.
    - 3) In Class II hazardous (classified) locations, the MSH rating shall be coordinated with the motor such that the maximum operating surface

temperature of any exposed surface does not exceed the lower of either the ignition temperature of the specific dust to be encountered or 165 degrees C in accordance with the applicable requirements of NEC Articles 500 and 502.

4. Motor Winding Temperature Switches (MWTS)
  - a. Unless otherwise specified or shown on the Drawings, motors rated greater than or equal to 10HP and less than 200HP shall be furnished with normally-closed (N.C.) motor winding high temperature switches (MWTS) embedded in the stator windings, wired in series, with the leads brought out to the motor terminal box.
  - b. Embedded MWTS shall be the thermostat type (not thermistor type) and shall operate at temperatures well below the temperature rating of the motor winding insulation system. Unless otherwise specified or shown on the Drawings, MWTS are not required where other temperature monitoring devices (e.g., RTD's) are required.
5. Resistance Thermal Detectors (RTDs)
  - a. Unless otherwise specified or shown on the Drawings, motors rated 200HP or greater shall be furnished with resistance thermal detectors (RTDs) embedded in the stator windings, two (2) per phase. Where specified in the individual equipment Specification, motors shall also be furnished with bearing RTDs, one per bearing.
  - b. RTDs shall be 3-wire, platinum, 100-ohm precision type with calibrated resistance-temperature characteristics. RTDs shall be pre-wired to terminal blocks located in an accessory terminal box as specified herein.
6. Vibration Protection
  - a. Where specified in the individual equipment Specification, motors shall be furnished with vibration protection as follows.
    - 1) Provide each motor with two (2) fully self-contained electronic vibration switches. Install one switch along the thrust axis of the motor (either front or rear of the motor) and the other switch on the side of the motor.
    - 2) Vibration switches shall be a Metrix 440 (for unclassified and Class I, Division 2 hazardous locations), Metrix 450 (for Class I, Division 1 and Class II, Division 1 hazardous locations) or approved equal, with the following features:
      - a) 120VAC input control power supply

- b) Internal accelerometer
- c) Velocity measurement via seismic-type transducers with RMS amplitude detection (detection range: 0.1-1.5 inches/sec).
- d) Fixed startup time delay (20 seconds) upon application of control power
- e) Two Form C SPDT discrete output relays with field-adjustable vibration setpoints and time delay (2 to 15 seconds) for alarm and shutdown
- f) One 4-20mA analog output for vibration monitoring

## 7. Differential Protection

- a. Where specified in the individual equipment Specification, motors shall be furnished with winding differential protection as follows:
  - 1) Provide each motor with three window-type current transformers, rated as specified or shown on the Drawings, for use as self-balancing differential protection of the motor. Current transformers shall be provided by the motor manufacturer and shall be factory-installed in the motor terminal box.
  - 2) Motors shall be manufactured with the six stator coil leads wired to the motor terminal box for application in a differential relay scheme, with each phase winding pair factory-installed through the corresponding CT.
  - 3) All ground connections and current transformer connections shall be made in the factory. Current transformers shall be shipped with factory-installed shorting strips on the secondary terminals.

## 8. Surge Protection

- a. Lightning/Surge Arrestors
  - 1) Where specified or shown on the Drawings, motors shall be furnished with lightning/surge arresters.
  - 2) The arresters shall be of the metal-oxide station type with porcelain tops, rated 3kV (RMS) with a maximum continuous operating voltage (MCOV) of 2.55kV (RMS) and maximum switching surge protection level of 6kV. Arrestors shall be rated in accordance with ANSI/IEEE C62.11.

- 3) Lightning/surge arresters shall be factory-installed in the motor terminal box. Where provided in conjunction with surge capacitors, they shall be part of a combined/coordinated assembly. Removable bus links shall be provided for motor testing. These links shall be treated to resist corrosion, designed to maintain a positive contact, and have low contact resistance.

b. Surge Capacitors

- 1) Where specified or shown on the Drawings, motors shall be furnished with surge capacitors, with the following exceptions:
  - a) Motors for operation on solid-state starters, including VFDs and RVSS, shall not utilize surge capacitors.
- 2) Surge capacitors shall be three-pole units rated 1.0 micro-farads per pole, equipped with built-in discharge resistors, and utilizing a non-polychlorinated biphenyl (non-PCB) insulating medium. Capacitors shall have hermetically-sealed bushings which allow for upright or horizontal/side mounting. Capacitors shall be rated for operation up to 650 volts (RMS) line-to-line, with a maximum peak voltage of 715 volts line-to-line.
- 3) Surge capacitors shall be factory-installed in the motor terminal box. Where provided in conjunction with lightning/surge arresters, they shall be part of a combined/coordinated assembly. Removable bus links shall be provided for motor testing. These links shall be treated to resist corrosion, designed to maintain a positive contact, and have low contact resistance.

## 2.03 EFFICIENCY AND POWER FACTOR

A. Efficiency

1. Motors shall meet or exceed the minimum energy efficiency requirements for the specific motor type and size in accordance with all applicable federal regulations (10 CFR Part 431) and US Department of Energy (DOE) rules.
2. Single-phase motors sized 1/4HP to 3HP (where included in the project scope), inclusive, shall be designed, tested, and Labeled as NEMA Premium Efficient motors in accordance with NEMA MG 1, utilizing the IEEE 114 test methods. Efficiency tests for these single-phase NEMA Premium Efficient motors shall be performed in accordance with the applicable procedures defined in NEMA MG 1 Part 12.60.
3. Three-phase motors sized 1/4HP to less than 1HP shall be designed, tested, and Labeled as NEMA Premium Efficient motors, utilizing the NEMA preferred IEEE

112 test Method A. Efficiency tests for NEMA Premium Efficient motors shall be performed in accordance with the applicable procedures defined in NEMA MG 1 Part 12.60.

4. Three-phase motors sized 1HP to 500HP, inclusive, shall be designed and Labeled as NEMA Premium Efficient motors in accordance with NEMA MG 1 when the motors are tested in accordance with the NEMA preferred test method IEEE 112, Method B (dynamometer). Efficiency tests for NEMA Premium Efficient motors shall be performed in accordance with the applicable procedures defined in NEMA MG 1 Parts 12.60 and 20.21.C.
5. Three-phase motors larger than 500HP shall be designed and Labeled as NEMA Premium Efficient motors in accordance with NEMA MG 1. Efficiency tests for these motors shall be performance in accordance with the applicable procedures defined in NEMA MG 1 Part 20.21.C.

B. Power Factor

1. Three-phase motors 1200RPM, inclusive, or greater shall be designed for a minimum rated power factor of 0.80 (lagging).

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Motors shall be installed as shown on the Drawings and in accordance with the manufacturer's installation instructions.

### **3.02 DELIVERY, STORAGE, AND HANDLING**

- A. Motors shall be properly protected from weather hazards. Motors shall not be allowed to be wrapped tightly in plastic while outdoors. Motors delivered to the site which will not be put in service for a time in excess of 30 calendar days, whether in storage or installed, shall have the shafts rotated a minimum of five (5) rotations every 30 days.
- B. Motors provided with space heaters shall have temporary power applied to the heaters no later than 30 calendar days after delivery to the site until permanent power can be applied to the heaters.
- C. Motors that, in the opinion of the Engineer, have not been properly protected shall be inspected by the manufacturer's representative. Any required electrical corrections for testing shall be made at the Contractor's expense prior to acceptance and/or use.
- D. All motors shall operate without any undue noise or vibration and shall show no signs of phase unbalance.

### 3.03 TESTING

- A. All tests shall be performed in accordance with the requirements of the General Conditions and Division 01. The following tests are required:
1. Witnessed Shop tests
    - a. None required.
  2. Shop Tests
    - a. All motors shall be shop tested and inspected in accordance with the equipment manufacturer's standard procedures. The manufacturer's testing and inspection procedures shall demonstrate that the equipment tested conforms to the requirements specified, all other applicable requirements, and shall be approved by the Engineer. At least 10 days' notice shall be given the Engineer prior to tests and inspection dates.
    - b. In addition to the efficiency and power factor testing specified herein, each motor shall be tested to determine compliance with the applicable requirements of the IEEE, ANSI and NEMA. Tests shall be as follows:
      - 1) Motors less than 50 HP:
        - a) Each motor shall be subjected to a standard, short commercial test including the following:
          - i. Running current, no load
          - ii. Locked rotor current
          - iii. High potential
          - iv. Winding resistance
          - v. Bearing inspection
      - 2) Motors 50 HP to less than 250 HP:
        - a) Each motor shall be subjected to the above tests in addition to the following:
          - i. Efficiencies at 100, 75, and 50 percent of full load
          - ii. Power factors at 100, 75, and 50 percent of full load
      - 3) Motors 250 HP or larger:
        - a) Each motor shall be subjected to a complete test including the following:

- i. Running current from no load to full rated load
- ii. Locked rotor current
- iii. High potential
- iv. Winding resistance
- v. Percent slip
- vi. Bearing inspection
- vii. Temperature rise at full rated load
- viii. Starting torque
- ix. Breakdown torque (calculated)
- x. Secondary current and voltage at collector rings (wound rotor)
- xi. Efficiencies at 100, 75, and 50 percent of full load
- xii. Power factors at 100, 75, and 50 percent of full load

4) Test Reports

- a) All test results for motors 50 horsepower or greater shall be submitted to the Engineer for approval.

3. Field Tests

- a. Field tests shall be performed in accordance with requirements specified in the General Conditions, Division 01, Section 26 05 00 – Basic Electrical Requirements, and NETA Acceptance Testing Specifications, latest edition.
- b. All field testing shall be witnessed by the Engineer or Engineer's Field Representative.
- c. All electric motors furnished for this project one (1) horsepower or larger shall have the information required in the following tabulation completed (see Exhibit "A" on following page).

(EXHIBIT A)

MOTOR TEST RECORD					
Motor Identification Remarks	Location	Specified Horsepower	Nameplate Horsepower	Nameplate Amperage (FLA)	Measured Amperage Under Normal Operating Conditions

**END OF SECTION**

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**SECTION 46 00 00**  
**EQUIPMENT GENERAL PROVISIONS**

**1.01 GENERAL**

**1.02 THE REQUIREMENT**

- A. The Contractor shall furnish, install, test, and place in acceptable operation all mechanical equipment and all accessories as specified herein, as shown on the Drawings, and as required for a complete and operable system.
- B. The mechanical equipment shall be provided complete with all accessories, special tools, spare parts, mountings, shims, sheaves, couplings, and other appurtenances as specified, and as may be required for a complete and operating installation.
- C. The Contractor shall provide the Owner complete and operational equipment/systems. To this end, it is the responsibility of the Contractor to coordinate all interfaces with related mechanical, structural, electrical, instrumentation, and control work and to provide necessary ancillary items such as controls, wiring, etc., to make each piece of equipment operational as shown and specified.
- D. The complete installation shall be free from excessive vibration, cavitation, noise, and oil or water leaks.
- E. The requirements of this section shall apply to equipment furnished under Divisions 40, 41, 43, and 46.

**1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS**

- A. All equipment, materials, and installations shall conform to the requirements of the most recent editions with latest revisions, supplements, and amendments of the specifications, codes, and standards listed in Section 01 42 00 – References.

**1.04 ACTION/INFORMATIONAL SUBMITTALS**

- A. Product Data: Comply with Section 01 33 00 – Submittals Procedures
- B. Shop Drawings shall be submitted to the Engineer for all equipment in accordance with Section 01 33 00 – Submittal Procedures and shall include the following additional information:
  - 1. Equipment name, identification number and specification number.
  - 2. Performance characteristics and descriptive data.
  - 3. Detailed equipment dimensional drawings and setting plans.

4. Drive and motor data as required by Division 26 – Electrical. Where pump and motor speeds are to be regulated by variable speed drives, the CONTRACTOR shall coordinate, furnish and exchange all necessary requirements with the respective equipment manufacturers to ensure compatibility and shall submit pump, motor and variable speed drive shop drawings together as a complete system.
5. Information on bearing types and bearing life.
6. Gear box design and performance criteria and AGMA service factor.
7. Piping schematics.
8. Equipment protective device details and connection diagrams.
9. Panel layout drawings, schematic wiring diagrams, and component product data sheets for control panels.
10. A list of spare parts and special tools to be provided.
11. Any additional information required to demonstrate conformance with the equipment specifications.
12. Warranty documentation including statement of duration of warranty period and contact phone numbers and addresses for warranty issues.
13. Shipment, delivery, handling, and storage instructions.

#### **1.05 CLOSOUT SUBMITTALS**

- A. Submit warranty documentation in compliance with:
  1. Section 01 33 00 – Submittal Procedures
  2. Section 01 61 00 – Product Requirements and Options
- B. Operation and Maintenance (O&M) manuals shall be submitted in accordance with Section 01 33 00 – Submittal Procedures and Section 01 78 23 Operation and Maintenance Data.

#### **1.06 MAINTENANCE MATERIALS SUBMITTALS**

- A. Operation and Maintenance (O&M) manuals shall be submitted in accordance with:
  1. Section 01 33 00 – Submittal Procedures
  2. Section 01 78 23 – Operation and Maintenance Data

B. Comply with Section 01 78 43 – Spare Parts and Extra Materials:

1. For spare parts, extra stock materials, and tools, submit quantity of items specified in associated Specification Section.
2. Submit complete list of spare parts, extra stock materials, maintenance supplies and special tools required for maintenance for one year with unit prices and source of supply. Indicate number/quantity specified and furnished, manufacturer, part number, description,

C. Comply with Section 01 79 00 – Instructions to Owner’s Personnel.

### **1.07 QUALITY ASSURANCE SUBMITTALS**

- A. Factory testing plan.
- B. Factory Test Results shall be submitted and approved prior to shipment of equipment.
- C. Field testing plan.
- D. Comply with Section 01 75 00 – Check Out and Start Up Procedures.
- E. Preliminary field test data
- F. Final field test data

### **1.08 GENERAL INFORMATION AND DESCRIPTION**

- A. All parts of the equipment furnished shall, be designed and constructed for the maximum stresses occurring during fabrication, transportation, installation, testing, and all conditions of operation. All materials shall be new and shall conform to all applicable Sections of these Specifications.
- B. All parts of duplicate equipment shall be interchangeable without modification. Manufacturer's design shall accommodate all the requirements of these Specifications.
- C. Equipment and appurtenances shall be designed in conformity with specifications, codes and reference standards.
- D. All bearings and moving parts shall be protected by bushings or other Engineer approved means against wear, and provision shall be made for accessible lubrication by extending lubrication lines and fittings to approximately 30 inches above finished floor elevation.
- E. Details shall be designed for appearance as well as utility. Protruding members, joints, corners, gear covers, etc., shall be finished in appearance. All exposed welds on machinery shall be ground smooth and the corners of structural shapes shall be rounded or chamfered.

- F. Machinery parts shall conform within allowable tolerances to the dimensions shown on the working drawings.
- G. All machinery and equipment shall be safeguarded in accordance with the specifications, codes, and reference standards.
- H. All rotating shafts, couplings, or other moving pieces of equipment shall be provided with protective guards of sheet metal or wire mesh, neatly and rigidly supported. Guards shall be removable as required to provide access for repairs.
- I. All equipment greater than 100 pounds shall have lifting lugs, eyebolts, etc., for ease of lifting, without damage or undue stress exerted on its components.
- J. All manufactured items provided under this Section shall be of current manufacture and shall be the products of manufacturers specializing in the manufacture of such products.

#### **1.09 EQUIPMENT WARRANTIES**

- A. Warranty requirements shall be as specified in Section 01 61 00 – Product Requirements and Options and Section 01 75 00 – Checkout and Startup Procedures. Warranty requirements are supplementary to the individual equipment specifications.

### **PART 2 – PRODUCTS**

#### **2.01 ANCHORS AND SUPPORTS**

- A. The Contractor shall furnish, install, and protect all necessary guides, bearing plates, anchor and attachment bolts, and all other appurtenances required for the installation of the devices included in the equipment specified. Working Drawings for installation shall be furnished by the equipment manufacturer, and suitable templates shall be used by the Contractor when required in the detailed equipment Specifications.
- B. Anchor bolts and fasteners shall be furnished in accordance with Section 05 05 23 – Metal Fastening, and with the individual equipment Specifications. All anchor bolts shall be a minimum of 1/2inch diameter. All anchor bolts, guard bolts, washers, clips, clamps, and fasteners of any type shall be constructed of 316 stainless steel, unless otherwise specified the individual equipment Specifications.
- C. The Contractor shall provide all concrete pads or pedestals required for equipment furnished. All concrete equipment pads shall be a minimum of 6” high, unless otherwise shown on the Drawings and shall be doweled.
- D. Pipe sleeves or other means of adjusting anchor bolts shall be provided where indicated or required. Equipment shall be leveled by first using sitting nuts on the anchor bolts, and then filling the space between the equipment base and concrete pedestal with nonshrink grout, unless alternate methods are recommended by the manufacturer and

are acceptable to the Engineer (such as shim leveling pumps, or chemical grout). Nonshrink grout shall be as specified in Section 03 60 00 – Grout.

## **2.02 STRUCTURAL STEEL**

- A. Structural steel used for fabricating equipment shall conform to the requirements of Section 05 12 00 – Structural Steel.
- B. All materials shall conform to applicable provisions of the AISC Specifications for the design and fabrication of structural steel, and to pertinent ASTM Standard Specifications.

## **2.03 DISSIMILAR METALS**

- A. All dissimilar metals shall be isolated in accordance with Section 05 10 00 – Metal Materials and to the satisfaction of the Engineer.

## **2.04 GALVANIZING**

- A. Where required by the equipment specifications, galvanizing shall be performed in accordance with Section 05 05 13 – Galvanizing.

## **2.05 STANDARDIZATION OF GREASE FITTINGS**

- A. The grease fittings on all mechanical equipment shall be such that they can be serviced with a single type of grease gun. Fittings shall be “Zerk” type.

## **2.06 ELECTRICAL REQUIREMENTS**

- A. All electrical equipment and appurtenances, including but not limited to motors, panels, conduit, and wiring, etc., specified in the equipment specifications shall comply with the applicable requirements of the Division 26 specifications and the latest National Electric Code. Motor starters and controls shall be furnished and installed under Division 26 and Division 40 unless otherwise specified in the individual pump specifications.
- B. In the individual equipment specifications, specified motor horsepower is intended to be the minimum size motor to be provided. If a larger motor is required to meet the specified operating conditions and performance requirements, the Contractor shall furnish the larger sized motor and shall upgrade the electrical service (conduit, wires, starters, etc.) at no additional cost to the Owner.
- C. Where variable frequency drives (VFDs) are specified, the Contractor shall be responsible for coordinating between equipment supplier and VFD supplier to ensure a complete and operational system. VFDs shall be furnished under Division 26 unless otherwise specified in the equipment specification.

- D. Motor starters and controls shall be furnished and installed under Division 26 and Division 40 unless otherwise specified in the individual equipment specifications.

## **2.07 ACCESSORIES, SPARE PARTS, AND SPECIAL TOOLS**

- A. Accessories, spare parts, and special tools shall be provided in accordance with Section 01 78 43 – Spare Parts and Extra Materials.

## **2.08 EQUIPMENT IDENTIFICATION**

- A. All mechanical equipment shall be provided with a substantial stainless-steel nameplate, mechanically fastened with stainless steel hardware in a conspicuous place, and clearly inscribed with the manufacturer's name, year of manufacture, serial number, and principal rating data.
- B. Each pump and other piece of mechanical equipment shall also be identified as to name and number by a suitable laminated plastic or stainless-steel nameplate mechanically fastened with stainless steel hardware; for example, "Raw Water Pump #1". Coordinate name and number with same on remotely located controls, control panel, and other related equipment.
- C. Nameplates shall not be painted over.

## **PART 3 – EXECUTION**

### **3.01 SHOP TESTING**

- A. All equipment shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents and that it will operate in the manner specified or implied.
- B. No equipment shall be shipped to the project until the Engineer has been furnished a certified copy of test results and has notified the Contractor, in writing, that the results of such tests are acceptable.
- C. A certified copy of the manufacturer's actual test data and interpreted results thereof shall be forwarded to the Engineer for review.
- D. If required by the individual equipment Specifications, arrangements shall be made for the Owner/Engineer to witness performance tests in the manufacturer's shop. The Engineer shall be notified ten working days before shop testing commences. Expenses are to be paid by Contractor.
- E. Shop testing of electric motors shall conform to:
  - 1. Section 26 05 60 – Low-Voltage Electric Motors

2. Section 26 05 00 – Basic Electrical Requirements.

### **3.02 SHIPMENT, DELIVERY, HANDLING AND STORAGE**

- A. Storage of equipment Shipment, delivery and handling of equipment and materials shall be in accordance with Section 01 65 00 – Product Delivery Requirements.
- B. and materials shall be in accordance with Section 01 66 00 – Product Storage and Protection Requirements.

### **3.03 MANUFACTURER’S FIELD SERVICES**

- A. Manufacturer’s field services shall be in accordance with Section 01 75 00 – Checkout and Startup Procedures.
- B. The Contractor shall arrange for a qualified factory trained Technical Representative from each manufacturer or supplier of equipment who is regularly involved in the inspection, installation, start-up, troubleshooting, testing, maintenance, and operation of the specified equipment. Qualification of the Technical Representative shall be appropriate to the type of equipment furnished and subject to the approval of the Engineer and the Owner. Where equipment furnished has significant process complexity, furnish the services of engineering personnel knowledgeable in the process involved and the function of the equipment. When necessary, the Contractor shall schedule multiple Technical Representatives to be present at the same time for the purpose of coordinating the operation of multiple pieces of related equipment.
- C. Services of the Technical Representative will require a minimum of two (2) site visits, one for installation and testing and one for startup and training, and will be for the minimum number of days recommended by the manufacturer and approved by the Engineer but will not be less than the number of days specified in individual equipment sections. Additional site visits may be required as described below and in the equipment specifications.
- D. For each site visit, the Technical Representative shall submit jointly to the Owner, the Engineer, and the Contractor a complete signed report of the results of his inspection, operation, adjustments, and testing. The report shall include detailed descriptions of the points inspected, tests and adjustments made, quantitative results obtained if such are specified.
- E. The manufacturer's Technical Representative shall provide the following services.
  - 1. Installation: The Technical Representative shall inspect the installed equipment to verify that installation is in accordance with the manufacturer’s requirements. Where required by individual equipment specifications, the Technical Representative shall also supervise the installation of the equipment.

2. Testing: After installation of the equipment has been completed and the equipment is presumably ready for operation, but before it is operated by others, the Technical Representative shall inspect, operate, test, and adjust the equipment as required to prove that the equipment is in proper condition for satisfactory operation under the conditions specified. Unless otherwise noted in the signed site visit report, the report shall constitute a certification that the equipment conforms to the requirements of the Contract and is ready for startup and that nothing in the installation will render the manufacturer's warranty null and void. The report shall include date of final acceptance field test, as well as a listing of all persons present during tests.
  3. Startup: The Technical Representative shall start up the equipment for actual service with the help of the Contractor. If equipment or installation problems are experienced, the Contractor and the representative shall provide the necessary services until the equipment is operating satisfactorily and performing according to the specifications at no additional cost to the Owner. Unless otherwise noted in the signed site visit report, the report shall constitute a certification that the equipment conforms to the requirements of the Contract and is ready for permanent operation and that nothing in the installation will render the manufacturer's warranty null and void.
  4. Training: Training shall be provided in accordance with Section 01 79 00 – Instruction of Owner Personnel.
  5. Services after Startup: Where required by the individual equipment specifications, the Technical Representative shall return to the project site thirty (30) days after the startup date to review the equipment performance, correct any equipment problems, and conduct operation and maintenance classes as required by the Owner. This follow-up trip is required in addition to the specified services of Technical Representative prior to and during equipment startup. At this time, if there are no equipment problems, each manufacturer shall certify to the Owner in writing that his equipment is fully operational and capable of meeting operating requirements. If the equipment is operating incorrectly, the Technical Representative will make no certification to the Owner until the problems are corrected and the equipment demonstrates a successful thirty (30) days operating period.
- F. The Contract amount shall include the cost of furnishing the Technical Representative for the minimum number of days specified, and any additional time required to achieve successful installation and operation. The times specified for services by the Technical Representative in the equipment Specifications are exclusive of travel time to and from the facility and shall not be construed as to relieve the manufacturer of any additional visits to provide sufficient service to place the equipment in satisfactory operation.
- G. The Contractor shall notify the Engineer at least 14 days in advance of each equipment test or Owner training session.

- H. The Technical Representative shall sign in and out at the office of the Engineer's Resident Project Representative on each day the Technical Representative is at the project.

### **3.04 INSTALLATION**

- A. The Contractor shall obtain written installation manuals from the equipment manufacturer prior to installation. Equipment shall be installed strictly in accordance with recommendations of the manufacturer. A copy of all installation instructions shall be furnished the Engineer's field representative one week prior to installation.
- B. The Contractor shall have on hand sufficient personnel, proper construction equipment, and machinery of ample capacity to facilitate the work and to handle all emergencies normally encountered in work of this character. To minimize field erection problems, mechanical units shall be factory-assembled insofar as practical.
- C. Equipment shall be erected in a neat and workmanlike manner on the foundations at the locations and elevations shown on the Drawings.
- D. All equipment sections and loose items shall be match-marked prior to shipping.
- E. For equipment that requires field alignment and connections, the Contractor shall provide the services of the manufacturer's qualified mechanic, millwright, or machinist, to align the equipment and motor prior to making piping connections or anchoring the equipment base. Alignment shall be as specified herein.
- F. The Contractor shall furnish oil and grease for initial operation and testing. The manufacturer and grades of oil and grease shall be in accordance with the recommendations of the equipment manufacturer.

### **3.05 ALIGNMENT**

- A. Set equipment to dimensions shown on drawings. Dimensions shall be accurate to +/- 1/16 inch unless otherwise noted on the drawings. Wedges shall not be used for leveling, aligning, or supporting equipment.
- B. General Equipment Leveling: Non-rotating equipment shall be set level to +/- 1/16 inch per 10-foot length (.005 inch per foot) unless otherwise noted on the drawings. Shims shall be used unless equipment is furnished with leveling feet. Set shims flush with equipment baseplate edges. When grouting is required, equipment shall be shimmed to allow a minimum of one-inch grout thickness. Grout shall cover shims at least 3 inches. Final level check shall be held for inspection and approval by Engineer before proceeding.
- C. Grouting

1. Fill anchor bolt holes or sleeves with grout, after bolt alignment is proven, and prior to placing grout under equipment bases.
  2. Surface Preparation. Roughen surface by chipping, removing laitance, and unsound concrete. Clean area of all foreign material such as oil, grease, and scale. Saturate area with water at least 4 hours prior to grouting, removing excess water ponds.
  3. Application. Place grout after the equipment base has been set and its alignment and level have been approved. Form around the base, mix grout, and place in accordance with the grout manufacturers published instructions. Eliminate all air or water pockets beneath the base using a drag chain or rope.
  4. Finishing. Point the edges of the grout to form a smooth 45-degree slope.
  5. After grout has cured (not before 3 days after placement) paint exposed surfaces of grout with shellac.
  6. Level Verification. After grout has cured, and immediately prior to drive alignment, recheck equipment for level and plumb. Re-level and square as necessary. Hold final checks for inspection and approval by Engineer.
- D. Inspect for and remove all machining burrs or thread pulls in female holes on mating surfaces of mounting frame and machine feet.
- E. Inspect and clean equipment mounting base pads, feet, and frames to remove all grease, rust, paint, and dirt.
- F. Assembled equipment shafts shall be set level to .0015 inches per foot of shaft length (+/- .0005 inches) up to a maximum of 0.015 inches for any length shaft unless the manufacturers requirements are more stringent or unless otherwise noted in the equipment specifications. Use the machined surfaces on which the equipment sets for the base/mounting frame leveling plane. Use the machined shaft surface for equipment leveling plane.
- G. Sprocket and Sheave Alignment. Check shaft mounted components for face runout and eccentricity (outside diameter) runout by magnetically mounting a dial indicator on a stationary base and indicating over 360 degrees on a continuous machined surface at the outside diameter of the component. Maximum allowable total indicated face runout and eccentricity for sprockets and sheaves will be per ANSI Standard B29.1-1975.
- H. Belt tensioning. Set drive belt tension to manufacturer's specification for the belt type. Recheck alignment after drive tensioning.
- I. Thermal/Mechanical Growth. Thermal/mechanical growth corrections for driver and driven machines will be used in vertical and horizontal alignment where applicable. The

equipment manufacturer will determine thermal/mechanical growth applicability for any machine and provide the correction offsets to be used.

#### J. Rotating Shaft Alignment

1. Fixtures will be set up on the driver and driven machine, machines shaft surfaces. Machined coupling hubs may be used only if there is no clearance to mount fixtures directly on the shafts.
2. Primary alignment method for direct drive machines is when coupled. Uncoupled alignment will be used only when approved by the Engineer.
3. Account for possible coupling flex by always rotating coupled machines in the same direction during alignment.
4. Uncoupled machines must be connected so that both shafts turn together without relative motion during alignment.
5. Indicator bar sag will be measured and included for each reverse indicator alignment setup.
6. Reverse Dial Indicator. The final maximum allowable misalignment: vertical and horizontal from the desired targets of .000 inches (for a non-thermal growth machine) or from the given target readings (for a thermal growth machine) must meet BOTH of the following conditions simultaneously: 1/2 the final total indicator reading at each indicator will be no more than shown in the table below AND the final remaining correction at each machine foot be no more than .001 inches of required movement.

Machine Speed (RPM)	Total Misalignment* (inches)
Up to 1800	.002
1800 and greater	.001

\* 1/2 indicator reading

### 3.06 FIELD TESTING

- A. Field testing shall be in accordance with Section 01 75 00 – Checkout and Startup Procedures.
- B. All equipment shall be set, aligned, and assembled in conformance with the manufacturer's drawings and instructions. Provide all necessary calibrated instruments to execute performance tests. Submit report certified by the pump manufacturer's representative.

### C. Preliminary Field Tests, Yellow Tag

1. As soon as conditions permit, after the equipment has been secured in its permanent position, the Contractor shall:
  - a. Verify that the equipment is free from defects.
  - b. Check for alignment as specified herein.
  - c. Check for direction of rotation.
  - d. Check motor for no load current draw.
2. Contractor shall flush all bearings, gear housings, etc., in accordance with the manufacturer's recommendations, to remove any foreign matter accumulated during shipment, storage or erection. Lubricants shall be added as required by the manufacturer's instructions.
3. When the Contractor has demonstrated to the Engineer that the equipment is ready for operation, a yellow tag will be issued. The tag will be signed by the Engineer, or his assigned representative and attached to the equipment. The tag shall not be removed.
4. Preliminary field tests, yellow tag, must be completed before equipment is subjected to final field tests, blue tag.

### D. Final Field Tests, Blue Tag

1. Upon completion of the above, and at a time approved by the Engineer, the equipment will be tested by operating it as a unit with all related piping, ducting, electrical and controls, and other ancillary facilities.
2. The equipment will be placed in continuous operation as prescribed or required and witnessed by the Engineer or his assigned representative and the Owner or his assigned representative.
3. The tests shall prove that the equipment and appurtenances are properly installed, meet their operating cycles and are free from defects such as overheating, overloading, and undue vibration and noise. Operating field tests shall consist of the following:
  - a. Check equipment for excessive vibration and noise as specified herein.
  - b. Check motor current draw under load conditions. The rated motor nameplate current shall not be exceeded.
  - c. Recheck alignment with dial indicators where applicable, after unit has run under load for a minimum of 24 hours.

- E. Additional field testing recommended by the manufacturer shall be performed at no cost to Owner.
- F. Until final field tests are acceptable to the Engineer, the Contractor shall make all necessary changes, readjustments, and replacements at no additional cost to the Owner.
- G. Upon acceptance of the field tests, a blue tag will be issued. The tag will be signed by the Engineer and attached to the unit. The tag shall not be removed, and no further construction work will be performed on the unit, except as required during start-up operations and directed by the Engineer.
- H. Defects which cannot be corrected by installation adjustments will be sufficient grounds for rejection of any equipment.
- I. All costs in connection with field testing of equipment such as lubricants, temporary instruments, labor, equipment, etc., shall be borne by the Contractor. Power, fuel, chemicals, water, etc. normally consumed by specific equipment shall be supplied by the Owner unless otherwise specified in the individual equipment specifications.
- J. The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof.
- K. Field testing of electric motors shall be in accordance with Section 26 05 60 – Low-Voltage Electric Motors and Section 26 05 00, Basic Electrical Requirements.

### **3.07 VIBRATION TESTING**

- A. Vibration testing shall be in accordance with Section 01 75 00 – Checkout and Startup Procedures.

### **3.08 FAILURE OF EQUIPMENT TO PERFORM**

- A. Any defects in the equipment, or failure to meet the guarantees or performance requirements of the Specifications shall be promptly corrected by the Contractor by replacements or otherwise.
- B. If the Contractor fails to make these corrections, or if the improved equipment shall fail again to meet the guarantees or specified requirements, the Owner, notwithstanding his having made partial payment for work and materials which have entered into the manufacture of said equipment, may reject said equipment and order the Contractor to remove it from the premises at the Contractor's expense.

- C. The Contractor shall then obtain specified equipment to meet the contract requirements or upon mutual agreement with the Owner, adjust the contract price to reflect not supplying the specific equipment item.
- D. In case the Owner rejects said equipment, then the Contractor hereby agrees to repay to the Owner all sums of money paid to him for said rejected equipment on progress certificates or otherwise on account of the lump sum prices herein specified.
- E. Upon receipt of said sums of money, the Owner will execute and deliver to the Contractor a bill of sale of all his rights, title, and interest in and to said rejected equipment; provided, however, that said equipment shall not be removed from the premises until the Owner obtains from other sources other equipment to take the place of that rejected.
- F. Said bill of sale shall not abrogate Owner's right to recover damages for delays, losses, or other conditions arising out of the basic contract.

### **3.09 PAINTING**

- A. All surface preparation, shop painting, field repairs, finish painting, and other pertinent detailed painting specifications shall conform to applicable paragraphs of Section 09 90 00 – Painting.
- B. All shop coatings shall be compatible with proposed field coatings.
- C. All inaccessible surfaces of the equipment, which normally require painting, shall be finished painted by the manufacturer. The equipment and motor shall be painted with a high-quality epoxy polyamide semi-gloss coating specifically resistant to chemical, solvent, moisture, and acid environmental conditions, unless otherwise specified.
- D. Gears, bearing surfaces, and other unpainted surfaces shall be protected prior to shipment by a heavy covering of rust-preventive compound sprayed or hand applied which shall be maintained until the equipment is placed in operation. This coating shall be easily removable by a solvent.

### **3.10 WELDING**

- A. The Equipment Manufacturer's shop welding procedures, welders, and welding operators shall be qualified and certified in accordance with the requirement of AWS D1.1 "Structural Welding Code - Steel" or AWS D1.2 "Structural Welding Code - Aluminum" of the American Welding Society, as applicable.
- B. The Contractor's welding procedures, welders, and welding operators shall be qualified and certified in accordance with the requirements of AWS D1.1 "Structural Welding Code - Steel" or AWS D1.2 "Structural Welding Code - Aluminum" of the American Welding Society, as applicable.

- C. The Contractor shall perform all field welding in conformance with the information shown on the Equipment Manufacturer's drawings regarding location, type, size, and length of all welds in accordance with "Standard Welding Symbols" AWS A2.0 of the American Welding Society, and special conditions, as shown by notes and details.

**END OF SECTION**

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**SECTION 46 43 21.13**  
**CIRCULAR SECONDARY CLARIFIER EQUIPMENT**

**PART 1 – GENERAL**

**1.01 THE REQUIREMENT**

- A. The Contractor shall furnish, install, test, and place in acceptable operation, all secondary clarifier equipment, complete with all accessories, special tools, spare parts, mountings, anchor bolts and other appurtenances as specified herein, as shown on the Contract Drawings, and as required for a complete and operating installation.
- B. The equipment furnished by the manufacturer for the secondary clarifiers shall include but not be limited to: stationary influent column with suitable upper inlet openings, center assembly with drive unit, drive overload protection, center cage, influent feedwell, trusses, settled solids collection mechanism, scum removal equipment (one rotating scum pipe and two rotating scum ducking skimmers), walkways, and drive platform with guards.
- C. The walkway bridge, drive unit, scum removal equipment, and solids collection mechanism shall be the full and undivided responsibility of the manufacturer of the solids collection mechanism in order to ensure complete coordination of the components and to provide unit responsibility.

**1.02 OPERATING CONDITIONS AND PERFORMANCE REQUIREMENTS**

- A. The clarifier shall be of the center column inverted siphon feed and peripheral overflow type and shall have sufficient mechanical ability to make a three-product separation of the feed. The three products shall be clarified overflow, biologically active suspended solids and scum.
- B. The influent well, distribution ports, piping, and the solids collection mechanism shall be designed based on the hydraulic design criteria in the table below.
- C. Clarifier Design Criteria

	<b>Secondary Clarifier 3</b>
Number of Units	1
Inside Tank Diameter, ft	140
Side Water Depth, ft	16
Tank Bottom Slope, in/ft	1 in/1 ft:
Center Column Diameter, inches	42
Influent Feedwell Diameter, ft-in	35
Influent Feedwell Depth, ft-in	11'-6"
Rotating Speed, rev/hr	1.5
Minimum Continuous Torque Rating (AGMA), ft-lbs	39,000
Minimum Ball Race Diameter, inches	59.6"
Minimum Ball Diameter, inches	1.00
Walkway Support (I-beam or Pony Truss)	Pony Truss
Walkway/Platform Live Load, lb/sf	85
Wind Load, lb/sf <sup>2</sup>	20
Structural Design Torque, % <sup>3</sup>	200%
<b>Minimum Flow<sup>4</sup></b>	
Total Influent Flow, mgd	14.0
Total RAS Flow, mgd	11.2
Clarifier Effluent Flow, mgd	3.5
RAS Flow (each clarifier), mgd	2.5
<b>Average Flow<sup>4</sup></b>	
Total Influent Flow, mgd	23.3
Total RAS Flow, mgd	18.6
Clarifier Effluent Flow, mgd	5.8
RAS Flow (each clarifier), mgd	4.65
<b>Maximum Month Flow<sup>4</sup></b>	
Influent Flow, mgd	28.0
Total RAS Flow, mgd	28.0
Clarifier Effluent Flow, mgd	7.0
RAS Flow (each clarifier), mgd	7.0
<b>Maximum Flow<sup>4</sup></b>	
Influent Flow, mgd	68.0

	<b>Secondary Clarifier 3</b>
Total RAS Flow, mgd	31.4
Clarifier Effluent Flow, mgd	17.0
RAS Flow (each clarifier), mgd	7.85
Solids Collection System Head Loss at Max Flow, inch	12

1 All dimensions are nominal dimensions. Equipment supplied shall conform to the actual dimensions shown on the Contract Drawings.

2 Wind load on influent well with tank empty.

3 Structural Design Torque is expressed as a percentage of Drive Mechanism Continuous Torque Rating. At the structural design torque, no members of the center column, cage, or truss arms shall exceed the AISC allowable stress.

4 All four clarifiers are assumed to be in service.

### 1.03 SUBMITTALS

A. The following items shall be submitted in accordance with, or in addition to the submittal requirements specified in Section 01 33 00 – Submittal Procedures and Section 46 00 00 – Equipment General Provisions:

1. Shop Drawings
2. O&M Manuals
3. Certificate of design stamped by a Professional Engineer registered in the State or Commonwealth in which the project is located, stating that the equipment to be provided for this project meets or exceeds all structural design requirements of these specifications. The certificate shall state the respective loads and design criteria.
4. Details for connections between walkway support beam/truss and clarifier tank wall. Connection shall provide for thermal expansion/contraction as described herein. Connection details shall be provided for any member that spans between the center column of the clarifier and the tank wall.
5. Total weight of all rotating parts supported by the drive mechanism.
6. Drive mechanism rating calculations, stamped by a Professional Engineer registered in the State or Commonwealth in which the project is located, verifying the compliance of the drive mechanism and bearings with the specified continuous torque rating and bearing life rating.
7. Calculations verifying the hydraulic design requirements for influent column and ports and sludge collection system.

8. Calculations verifying compliance with the passive flocculation requirements specified herein.
9. Upon approval of Shop Drawings, the manufacturer shall submit final drawings of the clarifier equipment, sealed by a Professional Engineer registered in the State of North Carolina.

#### **1.04 WARRANTY AND GUARANTEE**

- A. Warranty and Guarantee shall be as specified in Section 46 00 00 – Equipment General Provisions with the exception that the warranty period shall be for two (2) years.

### **PART 2 – MATERIALS**

#### **2.01 MANUFACTURERS**

- A. The materials covered by these Specifications are intended to be of proven reliability and as manufactured by reputable manufacturers having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with the best practices and methods and shall operate satisfactorily when installed as shown on the Contract Drawings and operated per manufacturer's recommendations.
- B. The secondary clarifier shall be as manufactured by Evoqua, Ovivo, Walker Process, or equal.

#### **2.02 GENERAL INFORMATION**

- A. The clarifier mechanism shall be designed with no chains, sprockets, bearings or operating mechanism below the liquid surface or in contact with the liquid. Peripheral or traction drive mechanisms will not be regarded as equal to the center drive mechanisms specified. Major pieces of equipment such as the drive, center well, drive cage, and trusses are to be assembled in the shop, in so far as practical, to ensure proper fitting of parts, marked with erection marks and knocked down for shipment.
- B. The mechanism shall be designed so there is no field welding required, except for bridge splices.
- C. Panel lengths and structural member sizes shall be selected such that slenderness ratios do not exceed 200 for compression and 240 for tension. For strength, the controlling member force shall be used to determine member size.
- D. The equipment shall be of sufficient structural and mechanical strength to sweep in the 2" grout layer on the tank bottom. (This does not mean utilizing the clarifier arm for spreading the concrete.) Grouting shall be done in strict accordance with the manufacturer's recommendations.

- E. All structural design calculations shall allow for 1/16" corrosion allowance for all submerged carbon steel members.

### **2.03 CENTER COLUMN**

- A. A cylindrical steel center column shall be furnished for mounting over the influent pipe at the center of the tank floor to support the drive mechanism, cage and all rotating parts with no torque transmitted to the walkway. The manufacturer shall furnish the sufficient number of anchor bolts (min. 12-1 inch diameter) required for the torque load and for securing the center column on the concrete floor. Steel thickness of the center column shall be a minimum of 1/4-inch with minimum 3/4-inch thick top and bottom flanges.
- B. A set of influent ports located near the top of the center column shall diffuse the flow entering the tank and insure low velocity into the influent well. The ports' total opening area shall allow a maximum exit velocity of 1.75 fps at maximum flow or as required to eliminate turbulence detrimental to clarification as determined by the Engineer. The port openings shall be suitably reinforced.

### **2.04 CENTER DRIVE MECHANISM**

- A. The center drive mechanism shall consist of a turntable base mounted on the center column, a ball race, a turntable top with internal gear, and a drive unit.
- B. The turntable base and top shall be cast ductile iron, ASTM A48, Class 40B, or equal. Welded steel construction will not be permitted. The top of the turntable base shall provide adequate and convenient access to the drive mechanisms for proper maintenance.
- C. The turntable base shall be bolted to the center column and be designed to support the internal gear with the rotating mechanism and walkway. The turntable base shall have an annular raceway to contain balls upon which the internal gear rotates. The ball race shall have a minimum diameter as specified herein and shall be of adequate size to assure stability without the necessity of underwater guide shoes.
- D. The ball race shall contain balls constructed of chrome alloy steel ABMA Grade 500, or equal which shall bear vertically and horizontally on four (4) renewable, especially hardened (38-42 Rockwell C), steel liner strips fitted into the turntable base and internal gear. The balls shall run in an oil bath protected by suitable seals and steel dust shield. A sight gauge shall be provided for observation of oil level.
- E. An oil sight glass shall be provided for the upper and lower oil reservoirs. Readily accessible lubricant fill and drainpipes to 316 stainless steel fittings shall be provided. Lubricant systems that require auxiliary oil pumps or recirculating systems will not be acceptable.
- F. The internal gear shall also be machined from a high-grade cast iron or other approved metallurgy and shall be designed to support the center cage and collector. The internal

gear shall be driven by a heat-treated metal pinion and shaft keyed to the drive unit worm gear reduction unit mounted on the turntable base.

- G. Continuous lubrication of gears, bearings and other moving contact surfaces shall be provided by oil circulation, oil bath or appropriate grease fittings. Grease fittings in hard to reach places shall be extended so as to be accessible.
- H. At continuous torque, the gear teeth shall not be stressed to more than 50 percent of their yield strength.
- I. The drive head bearing shall be rated for the total rotating weight. The bearing shall have minimum B10 life rating of 200,000 hours.
- J. The drive unit shall be secured to the turntable base and shall consist of a worm, a worm gear, and a pinion mounted in a cast iron ASTM A48, Class 40B metal housing with a removable steel cover plate.
  - 1. The worm and worm shaft shall be cast as an integral unit or separate keyed units and shall be heat treated steel (ASTM 4142N) or alloy steel (AISI 8620) with the worm threads surface hardened and finish ground or carbonized, hardened, ductile iron minimum Grade 80-60-04 (ASTM A536). The worm gear shall be a cast ductile iron, ASTM 80-55-06 or centrifugally cast bronze.
  - 2. The worm and worm gear shall operate in an oil bath. A sight gauge shall be provided for observation of the oil level.
  - 3. The pinion shall be alloyed steel AISI 8620, carburized, hardened (50-55 Rc). The pinion shaft shall be keyed to the worm gear and the pinion shall mesh with and rotate the internal gear.
  - 4. Bearings supporting the worm, worm gear and the pinion shall be precision tapered roller bearings and shall operate in an oil bath. The lower pinion shaft bearing shall be grease lubricated or the bearings, including the shaft bearings shall operate in an oil bath.
- K. The complete drive mechanism shall be designed in accordance with AGMA Sections 2001-C95, "Fundamental Rating Factors and Calculation Methods for Involute and Helical Gear Teeth", and 6034-B92, "Practice for Enclosed Cylindrical Worm Gear Speed Reducers and Gearmotors" based on 24-hour continuous duty and 20 year design gear life, based on the AGMA rated torque. All bearings shall be designed for a minimum B-10 life of 200,000 hours. The AGMA rated torque of the drive shall be the lowest value computed for the spur gear set, both strength and durability calculations, and the worm gear set in accordance with referenced AGMA standards 2001-C95 and 6034-B92. The drive mechanism shall have a minimum AGMA service factor of 1.25 at the continuous torque rating specified herein.
- L. Overload Device

1. The clarifier drive unit shall be equipped with an electrical mechanical overload control device. The device shall be activated by thrust from the worm shaft. A calibrated spring shall react to the worm thrust and allow axial movement of the worm shaft to activate a pointer. The pointer shall be covered by a plexiglass window providing a visual reading of the relative main gear output torque on a 0 to 100 percent graduated scale. The device shall activate an alarm switch and motor cut-out switches.
  2. Exposed linkage bars or rods or moving final worm gear housings will not be accepted.
  3. The torque overload indicator shall be visible to an operator in a standing position beside the clarifier drive mechanism.
  4. The alarm and motor cut-out switches in the control device shall be factory calibrated and set to the required torque. Switches shall normally open, 240 VAC. The settings shall be as follows:
    - a. Alarm Torque Set at 85% of Mechanism Continuous Torque Rating (AGMA)
    - b. Motor Cut-out Set at 100% of Mechanism Continuous Torque Rating (AGMA)
    - c. Motor Back-up Safety Shear Pin Device Set at 130% of Mechanism Continuous Torque Rating (AGMA)
  5. The pointer control switches and electrical terminals shall be mounted in NEMA 4X stainless steel enclosure that is integral to the worm gear housing. The enclosure shall be sealed to the housing to prevent moisture from entering either the overload or drive unit. Enclosure and switches shall be suitable for use in a Class I, Division 2 hazardous area.
  6. Current devices shall not be used in lieu of the overload device specified.
- M. The drive unit shall be driven by a gearmotor through a roller chain drive. Each gearmotor shall be AGMA Class II, mounted with its base at least 3 feet above the liquid level, shall be of ample size to operate the clarifier and shall be horizontal type, mounted on top of the worm gear housing.
- N. The complete drive shall be assembled and finish painted in the manufacturer's shop and tested to assure the drive is running properly and to calibrate the drive control. Completed test report shall be sent to the Engineer verifying the drive meets the quality assurance of the manufacturer and Engineer.

## **2.05 CENTER CAGE AND INFLUENT FEEDWELL**

- A. A center cage made up of structural steel members and of an all-welded steel construction shall be bolted to the internal gear and shall be sufficiently strong and stiff to support and rotate all sludge collection, scum removal, and other rotating equipment under maximum load with 1.5 safety factor. The cage shall encompass the center column and transmit and/or carry all toques without overstressing members. No torques shall be transmitted to access bridge.
- B. The influent feedwell shall be constructed of minimum 1/4" thick steel plate with stiffening angles. The top of the feedwell shall extend 6 inches above the maximum clarifier water level and shall be provided with a least four (4) baffled slots at water level to permit escape of floating material.
- C. The Energy Dissiptating Inlet (EDI) shall be constructed of minimum 1/4" thick steel plate with stiffening angles and shall have minimum dimensions 16'-0" diameter and 3'-0" deep. The feedwell shall extend 6-inches above the maximum clarifier water level and shall be designed for a maximum of 3-inches headloss at peak flow. The EDI shall have a minimum of 10 diffusion ports sized 12.75-inches wide x 29.50-inches high for counter-clockwise flow. The EDI shall be supported by the cage and be designed to diffuse the liquid into the feedwell in a tangential direction without excessive disturbance or formation of vertical velocity currents. The rotating EDI shall be designed with a full bottom extending to within 1-inch of the center column. It shall include an upper rim angle for stiffness. Multiple tangential diffuser gates shall be provided to induce a tangential flow in a direction opposite of the rake arm direction between the EDI and feedwell and specifically preclude any vertical currents. The vertical wall of the gates shall be curved at a constant radius and shall not restrict the flow. The tangential baffles shall extend past the gate openings at least the same distance as the opening width. The gates shall have a fixed bottom to prevent vertical currents as the flow exists the EDI.

## **2.06 SOLIDS COLLECTION MECHANISM – SLUDGE SCRAPER ARMS**

- A. The solids collection mechanism shall consist of two (2) structural steel arms of minimum 1/4" box truss construction conforming to the slope of the tank floor. The structural steel arms shall be rigidly bolted to the center cage without use of supporting guy or tie rods and shall be provided with 1/4" steel bolted blades set and spaced to scrape the settled sludge on the tank bottom to the centrally located sludge hopper.
- B. There shall be two (2) spiral scraper blades, one inner and one outer, per rake arm. The inner spiral scraper shall have a blade depth tapered from 30 inches to 20 inches minimum; the outer spiral scraper shall have a blade depth tapered from 20 inches to 6 inches minimum. The angle of attack for both spiral scraper blades shall be between 30 and 32 degrees. Additionally, there shall be two (2) outward raking straight scraper blades. The blade depth for the straight scraper blades shall be a uniform 20 inches and the angle of attack shall be 60 degrees. These blades shall be vertically adjustable,

located parallel to the tank bottom, and shall continuously remove the required proportional settled sludge volume to effect a uniform withdrawal over the full radius of the clarifier.

- C. Each rake arm with its blades shall be fully shop welded and shipped in one piece. Adjustable stainless steel squeegees shall be furnished for all blades and shall project 1-1/2" below the bottom of the blade secured by 316 stainless steel bolts and nuts.

## **2.07 SCUM REMOVAL EQUIPMENT – DUCKING SKIMMER ASSEMBLY**

- A. The scum removal equipment shall consist of one (1) rotating scum pipe and associated baffles and devices to collect and direct floating scum to the rotating pipe. In addition to the rotating pipe assembly, the system shall consist of two (2) skimmer assemblies and additional devices specified and required for proper operation. Skimming equipment shall operate with the circumferential scum baffle indicated on the Drawings. The sludge collector arms shall support the skimmer assemblies. Designs that rely on the scum baffle for support will not be acceptable. The scum pipe shall be supported from the walkway. Each skimmer assembly shall be furnished with pivot supports that allow the skimmer blade to pass under the scum pipe without interfering with the operation of the scum pipe. The scum pipe dipping cycle shall begin as a skimmer assembly approaches the scum pipe, by rotating the scum pipe to receive scum and flushing water and shall be completed by returning the scum pipe to the closed position as the skimmer assembly passes. The scum pipe shall discharge scum by gravity flow into a scum pit attached to the scum pipe and located near the basin perimeter.
- B. The equipment manufacturer shall be responsible for the design of all components, and shall provide evidence of having previously furnished similar scum removal systems.
- C. The skimmer assemblies shall be supported each from a truss arm. Each skimmer assembly shall collect floating scum the full distance between the scum baffle and the influent well, and within the influent well. Each skimmer assembly shall consist of a skimmer blade, blade supports, support pivot bearings, wipers, balancing counterweights, and return mechanism. The skimmer blade shall be manufactured of 10-gauge stainless steel, 12" high, furnished in sections not exceeding 10-feet long. The skimmer blades shall be sealed between sections and shall have adequate supports attached to the sludge collector arms. The pivot bearings shall be suitable for underwater service and shall be of the water lubricated or self-lubricating type not requiring additional lubrication. A wiper shall be provided on the outer skimmer blade to collect scum between the end of the skimmer blade and the scum baffle. The wiper shall be neoprene or other suitable flexible corrosion resistant material. A positive return mechanism actuated by a counterweight shall be provided to rotate the skimmer blade to the vertical position after it passes under the scum pipe.
- D. Cable or float mechanisms will not be acceptable. Each skimmer assembly shall be provided with additional supports or stops as required to prevent damage to the equipment when the basin is dewatered or when the collector is operated in a dry basin.

- E. The rotating scum pipe assembly shall consist of a Type 304 stainless steel pipe, not less than 16" O.D, with rectangular weir openings, support bearings and a motor operated actuating system to control the dipping cycle. The weir openings shall be 60-degree slots with 1-1/4" freeboard and shall be set at an elevation equivalent to those of the three existing secondary clarifiers. The weir shall rotate over the entire range from a closed position to a depth corresponding to 1.0 inch below the operating liquid level. The weir shall automatically return to the closed position at the end of the dipping cycle. The system shall be self-locking so as to maintain any set position. The pipe shall be level to within 0.125-inches and shall not deflect more than 0.15 inches under any condition. Supports for the rotating scum pipe shall be lined with material to provide a low friction contact surface and to prevent wear between the scum pipe and supports. Each support shall be provided with a skimmer blade guide to provide a gradual return of the blade to the water surface after ducking under the scum pipe. To facilitate this, a bearing/guide support shall be located and centered on each skimmer blade section. Supports (attached to the bridge) shall be fully adjustable for leveling the scum pipe. Blades shall be provided with replaceable wearing shoes where they contact the guides.
- F. A suitable watertight seal shall be provided for the open end of the pipe. The seal shall be so constructed that it shall remain effective even with a slight misalignment of the pipe. The seal shall not be affected by grease, mild acids, and alkalis. The seal shall be readily renewable without removing the pipe from the supporting brackets and shall not bind or impede the smooth action of the revolving pipe.
- G. The rotating scum collecting pipe actuator shall be modulating and shall be equivalent to units as specified in Section 40 05 57, Valve Operators and Electric Valve Actuators. The rotating scum collecting pipe shall be operated by a 460V, 3 Phase, 60 Hertz motor. The drive shall be linked to the rotating trough by an adjustable arm. The system shall be mechanically adjustable while in service and shall be located in proximity to the walkway.
- H. An open topped (grated) scum pit shall be located along the outside wall of the clarifier as shown on the Contract Drawings. Scum shall accumulate in this scum pit.

## **2.08 WALKWAY AND DRIVE PLATFORM**

- A. Each secondary clarifier shall have a walkway spanning from the tank wall to the drive platform. The walkway shall be supported from the center column on one end and from the tank wall on the opposite end. Walkway shall be supported by "pony trusses" or I-beams as specified in the "Clarifier Design Criteria" table and shall be designed to support all light poles, fixtures, and other appurtenances as shown on the Contract Drawings. The walkway shall have a minimum width of 3'-0" and shall be designed to safely withstand all dead load plus the specified live load over the entire span with a maximum deflection of L/500.
- B. A drive platform shall be provided around the center assembly and drive and shall provide a minimum clear distance of 2'-6" around all equipment for maintenance and

service of the drive assembly. The drive platform shall be supported with a structural steel frame (minimum 1/4-inch thickness). Framing shall be such that all equipment requiring service can be accessed from directly above by removing sections of grating attached to the frame.

- C. Walkway and drive platform shall be provided with serrated aluminum I-Bar grating. On the drive platform, aluminum grating sections shall be easily removable for access to the equipment. Guards and continuous 1/4-inch thick x 4" high aluminum kickplates shall be provided along both sides of the walkway and surrounding the drive platform.
- D. The walkway connection to the outer concrete wall shall provide for thermal expansion and contraction of the walkway by use of stainless steel self-lubricating plate bearings. A means shall be provided to prevent lateral movement of the bridge at the outer wall. The Contractor shall provide ample size and strength 316 stainless steel anchor bolts for the bridge terminal supports at the concrete tank wall.
- E. All structural steel members and all aluminum grating, guards and kickplates shall be furnished and installed in accordance with Division 05 – Metals and as shown on the Drawings. All walkway and drive platform structural steel members shall be hot dip galvanized.

## **2.09 EFFLUENT WEIR AND SCUM BAFFLE**

- A. The effluent weir and scum baffle to be furnished and installed under this Section shall be as shown on the Contract Drawings and as specified herein and shall be furnished and installed by the Contractor.
- B. The effluent weir shall consist of FRP sections, fastened to the tank wall with Type 316 stainless steel anchor bolts and hex nuts and FRP washers to allow for vertical adjustment. The Contractor shall seal all joints between walls and weirs with a suitable waste resistant and chlorine resistant mastic.
- C. The scum baffles shall consist of FRP sections attached to the tank wall by Type 316 stainless steel angle brackets, anchor bolts and hex nuts to enable vertical and radial adjustment.
- D. The effluent weir and scum baffle shall be as specified under Section 06 51 00 – Glass Fiber and Resin Fabrications.

## **2.10 ELECTRICAL AND CONTROL REQUIREMENTS**

- A. Electrical Requirements

Reference Section 26 05 60 – Low-Voltage Electric Motors

	<b>Clarifier Drive</b>
Compliance, Deviations, and Exceptions (CD&E) Letter Required	Yes
Electrical Ratings	460V, 3 ph, 60 Hz
Starting Method Compatibility	Full-Voltage Non-Reversing (FVNR)
Inverter Duty (NEMA MG 1 Part 31)	No
IEEE 841 Severe Duty Motor	No
Maximum Horsepower, HP	3/4
Service Factor (SF)	1.15
Nominal Speed, rpm and poles	1800 rpm (4-pole)
Minimum Reduced Operating Speed (Turndown Speed), rpm	N/A
Winding Insulation Class	Class F
Enclosure Type	Class I, Div 2 Hazardous TEFC
Hazardous Location Installation	Class I, Division 2, Group C/D
Mounting and Drive Type	Horizontal, Direct Coupled Drive
Motor Bearing Lubrication	Grease (Feed)
Motor Space Heater (MSH)	Yes
Motor Winding Temperature Switches (MWTS)	No

## 2.11 CONTROL REQUIREMENTS

- A. The equipment manufacturer shall supply two limit switches to be mounted on the scum baffle. The skimmer arm shall trip the first switch to begin the pass as the clarifier mechanism rotates. The second switch is tripped upon completion of the pass (when the skimmer arm passes over the scum pipe). The limit switches shall be suitable for use in a Class I, Division 2 hazardous location.

## 2.12 SPARE PARTS

- A. Spare parts shall be provided in accordance with Section 46 00 00 – Equipment General Provisions and shall include the following for each series of clarifiers:
1. One (1) set of all bearings and bearing seal rings for drive unit.
  2. Two (2) sets of all gaskets.
  3. Two (2) sets of spur gear felt seals and replaceable bearing races.
  4. Sprockets and chain links for tip speeds of 5, 10, 15 and 20 feet per minute.
  5. Two (2) sets neoprene lip seals.

- 6. One (1) spare sight glass or oil gauge.
- 7. One (1) set all bearings for skimmer system.

**PART 3 – EXECUTION**

**3.01 MANUFACTURER’S FIELD SERVICES**

A. The services of a qualified manufacturer's technical representative shall be provided in accordance with Section 46 00 00 – Equipment General Provisions and shall include the following site visits:

- 1. Clarifier

Service	Number of Trips	Number of Days/Trip
Installation and Testing	1	1
Startup and Training	1	2

**3.02 FIELD TESTING**

- A. The equipment shall be field tested by the Contractor in accordance with the instructions and drawings of the manufacturer and Section 46 00 00 – Equipment General Provisions.
- B. Solids collector mechanisms shall be field tested, after erection, and in the presence of the Engineer and manufacturer's representative to confirm and verify the structural and mechanical compliance to the torque requirements specified. The field acceptance test shall include checking the operation of the warning and drive shut-down circuitry.
  - 1. To accomplish such a test, the Contractor shall be required to secure the ends of the truss arm(s) to the tank floor. A load shall then be manually applied through the drive mechanism until the specified "Design Torque" is indicated on an approved testing gauge. Complete test procedures and apparatus shall be submitted to the Engineer for approval prior to testing.
  - 2. When more than one clarifier mechanism is being provided, a field test of torque capability shall be required on one of the collecting mechanisms (to be chosen by the Engineer). If the torque test fails on the chosen clarifier, all collecting mechanisms shall be tested at no additional cost to the Owner.
- C. Field tests for the clarifier equipment shall be conducted with the clarifier full to the weir elevation with plant effluent water. The Contractor shall provide all temporary pumps and piping for filling the clarifier with plant effluent water for testing. Contractor may complete

field tests with the plant effluent water used to check water tightness of structures as approved by the Engineer.

1. The Contractor shall demonstrate that the solids collection mechanism operates properly with plant effluent water.
  2. The Contractor shall demonstrate that the scum removal equipment properly removes scum from the clarifier surface.
- D. The scum removal equipment shall function properly with no mechanical problems for a period of 30 days before the scum removal equipment is accepted.

**END OF SECTION**

# APPENDICES

**REPLACE CLARIFIER #3 MECHANISM AT THE ROCKFISH CREEK WATER RECLAMATION FACILITY**

**Construction Notes**

**1. Summary of Work**

The Contractor shall demolish, remove, dispose of, and replace with new, the Clarifier #3 equipment as indicated below:

- Stationary Influent Column
- Center Assembly with Drive Unit
- Center Cage
- Influent Feedwell
- Trusses
- Center Solids Collection Mechanism
- Scum Removal Equipment
- Effluent Weir
- Walkways
- Drive Platform with Guards

The project Record Drawings from the original Clarifier #3 construction, complete with redline mark-ups indicating the work to be performed under this contract, are provided herein.

Contractor shall perform all work to include testing and startup of new clarifier equipment per manufacturer's recommended practices. Refer to the project Technical Specifications for the detailed requirements of the work.

**2. Facility Operation**

The Rockfish Creek Water Reclamation Facility will be maintained in continuous operation at all times during the construction period. The Contractor shall schedule and conduct the work such that it will not impede the quality of any treatment process, create potential hazards to operating equipment and/or personnel, reduce the quality of the plant effluent, or cause odor or other nuisance.

**3. Basin De-watering**

The Contractor shall be aware that the project site's normal groundwater elevation may be higher than the clarifier basin floor elevations. Clarifier #3 is equipped with twenty-two hydrostatic basin relief valves that open as the basin is drained for maintenance, allowing it to partially flood. These relief valves shall be maintained in normal operating condition throughout the course of the work. The existing RAS suction piping will not be available for use in de-watering the Clarifier #3 basin during construction. Hence, the Contractor shall provide, maintain, and operate pumping equipment of sufficient capacity to preserve a dry work area environment throughout the duration of the project.

**4. RAS / WAS Basin Drain Piping**

The Contractor shall employ all precautions necessary to prohibit the accumulation of debris in the clarifier sump basin and hence prevent any foreign materials from being drawn into the Return Activated Sludge (RAS) / Waste Activated Sludge suction piping.

**5. Clarifier Scum Trough and Scum Box**

The Contractor shall employ all precautions necessary to prohibit the accumulation of debris in the scum trough and scum box during the course of surface preparation and painting operations. Should the scum pit become clogged despite these efforts, the Contractor shall be responsible for all pumping, and cleaning required to remove any accumulation of blast material or other debris resulting from the work.

**6. On-Site Debris Stockpiling and Disposal**

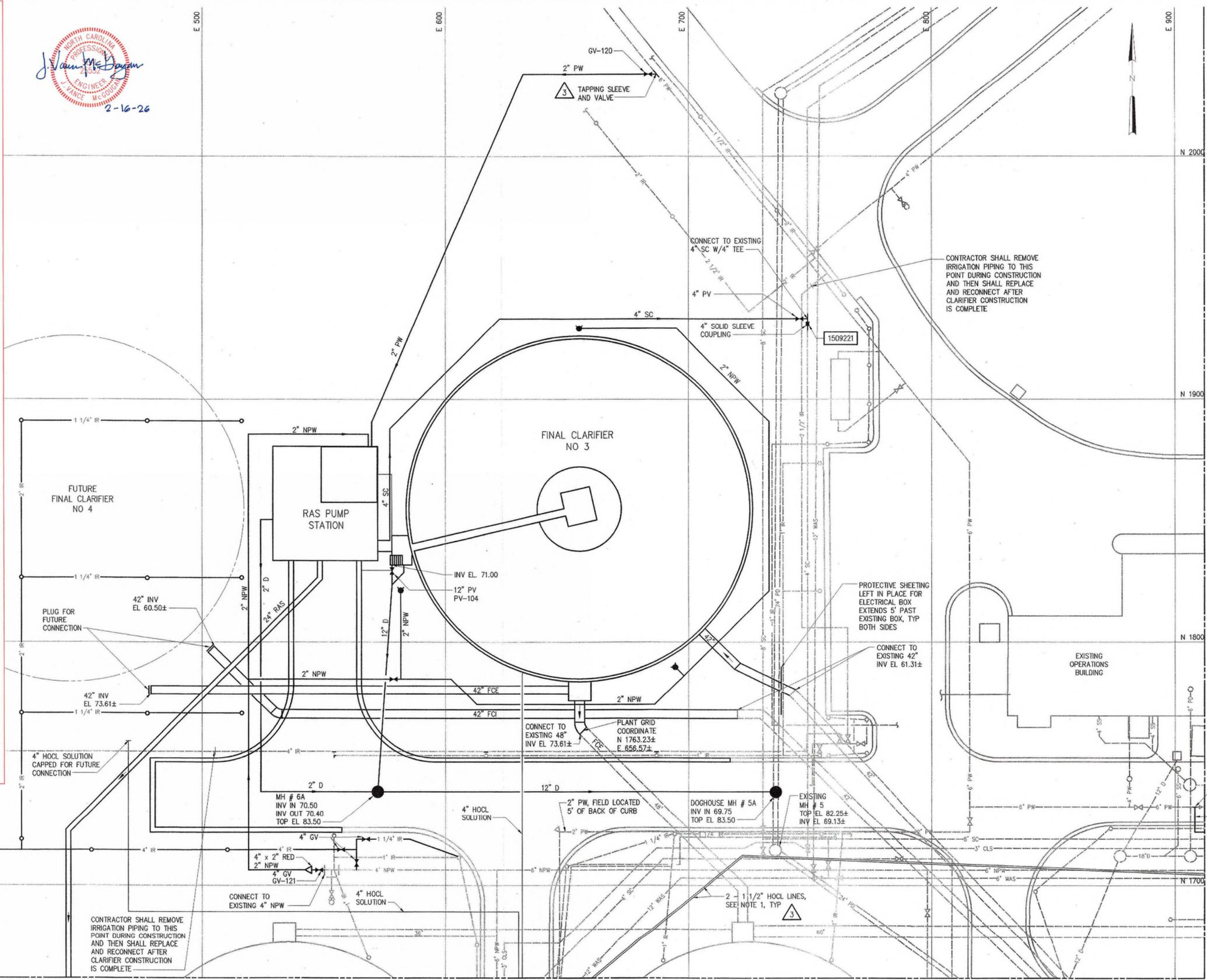
The PWC shall provide the Contractor with area on-site that may be used for the stockpiling of debris during the work. The Contractor shall be responsible for the ultimate disposal of all debris resulting from their operations, in accordance with applicable Federal, State, and local laws, regulations, and rules.

**7. Scrap Materials**

All salvageable steel materials demolished in the course of the work shall remain the property of PWC. The Contractor shall demolish all materials to be retained into a size small enough to fit into the dumpster provided by PWC.

**8. Electrical Work**

The Contractor shall coordinate with PWC Maintenance personnel regarding the disconnection all power sources prior to beginning demolition operations. All electrical equipment removed shall be re-installed with all power sources restored as part of the testing and start-up procedures.



**NOTES:**  
 1. 2-1/2" HOCL LINES, DIRCT BURY WITH APPROXIMATELY 24" OF COVER. LINES EXTEND FROM VAULT #V4 TO EXISTING RAS PUMP STA. ONE LINE TO BE USED AS A SPARE IF REQUIRED

(FOR CONTINUATION SEE DWG M12)

PLAN  
1"=20'

(FOR CONTINUATION SEE DWG M13)

**RECORD DRAWING**

DESIGNED	MJM
DRAWN	JTB
CHECKED	<i>[Signature]</i>
PROJ. ENGR.	MJM
APPROVED	<i>[Signature]</i>
DATE	8/01
BY	<i>[Signature]</i>

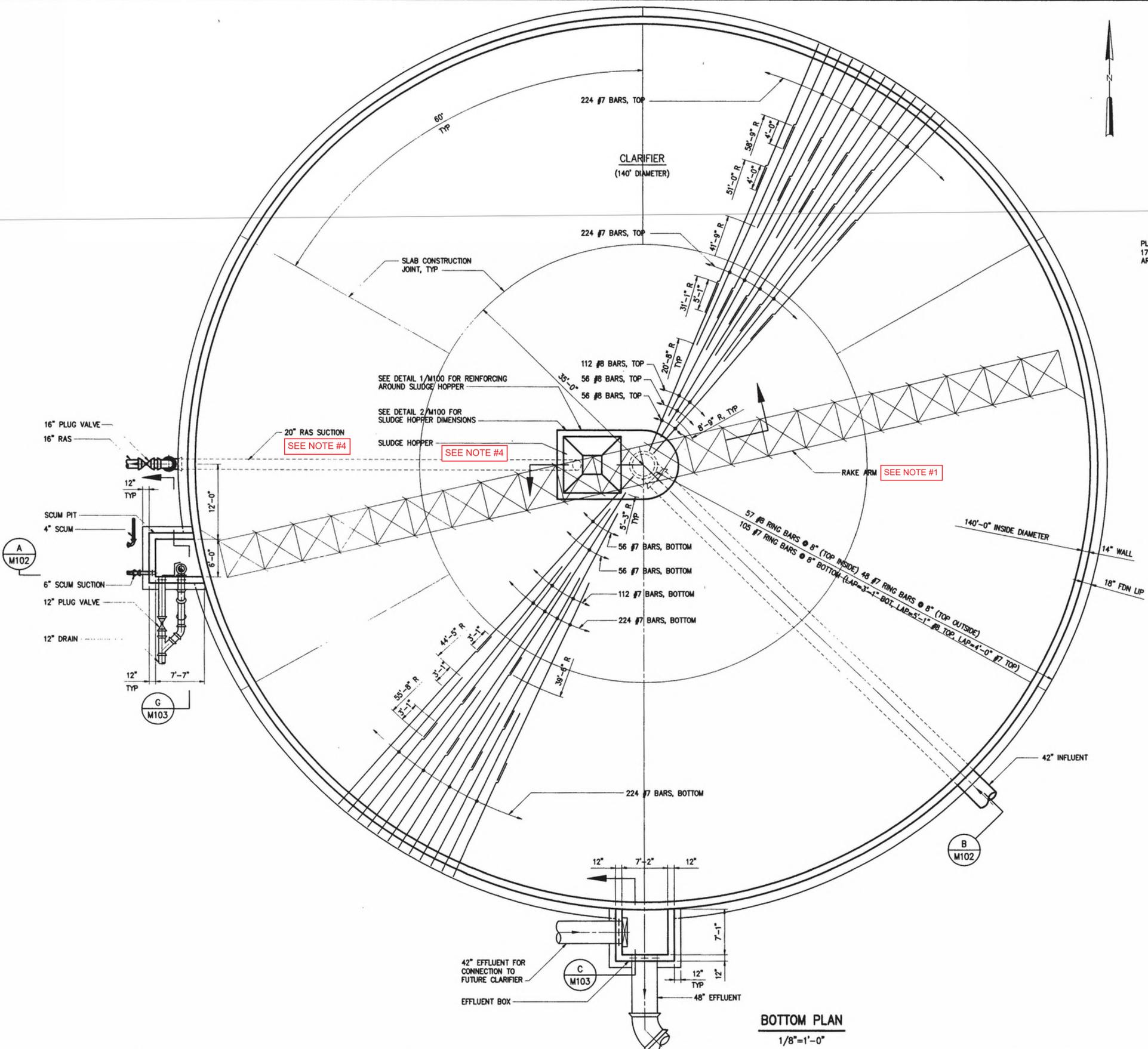


**Hazen and Sawyer**  
 Environmental Engineers & Scientists  
 Raleigh, North Carolina

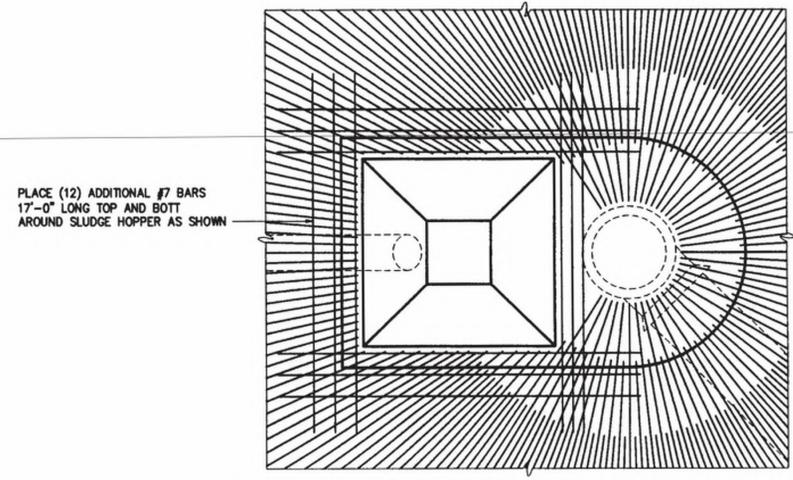
**PUBLIC WORKS COMMISSION**  
 CITY OF FAYETTEVILLE, NORTH CAROLINA  
 ROCKFISH CREEK WRF EXPANSION PHASE 1  
 AND DISINFECTION IMPROVEMENTS  
 AT THE CROSS CREEK WRF

**SITE WORK**  
**MECHANICAL**  
**AREA 2**  
**YARD PIPING**

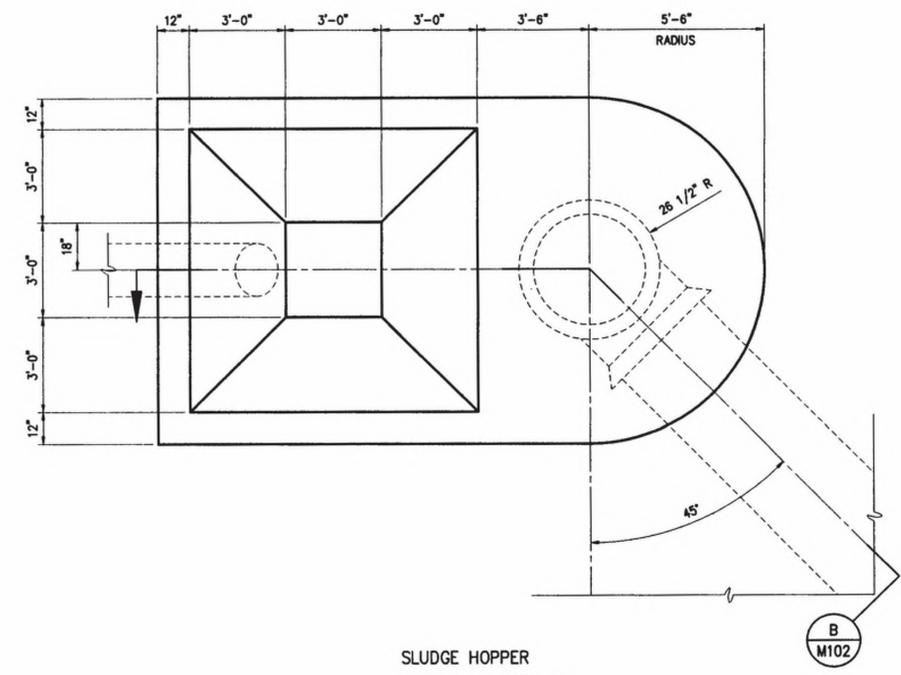
DATE	APRIL 1998
H & S JOB NUMBER	30045
CONTRACT NUMBER	1A
DRAWING NUMBER	M11
SHEET	19 OF 120



**BOTTOM PLAN**  
1/8"=1'-0"



**RADIAL BARS AT SLUDGE HOPPER**  
DETAIL 1  
1/4"=1'-0" M100



**SLUDGE HOPPER**  
DETAIL 2  
3/8"=1'-0" M100

DESIGNED	MJM/JDW
DRAWN	JTB/ADO
CHECKED	<i>[Signature]</i>
PROJ. ENGR.	MJM
ISSUED FOR	DATE BY APPROVED
3	RECORD DRAWING 8/01 <i>[Signature]</i>
2	CONSTRUCTION
1	REGULATORY APPROVAL
NO.	

Professional Engineer seals for Robert S. DiFiore, Mark J. Messere, and Benjamin Lee Roach, all registered in North Carolina.

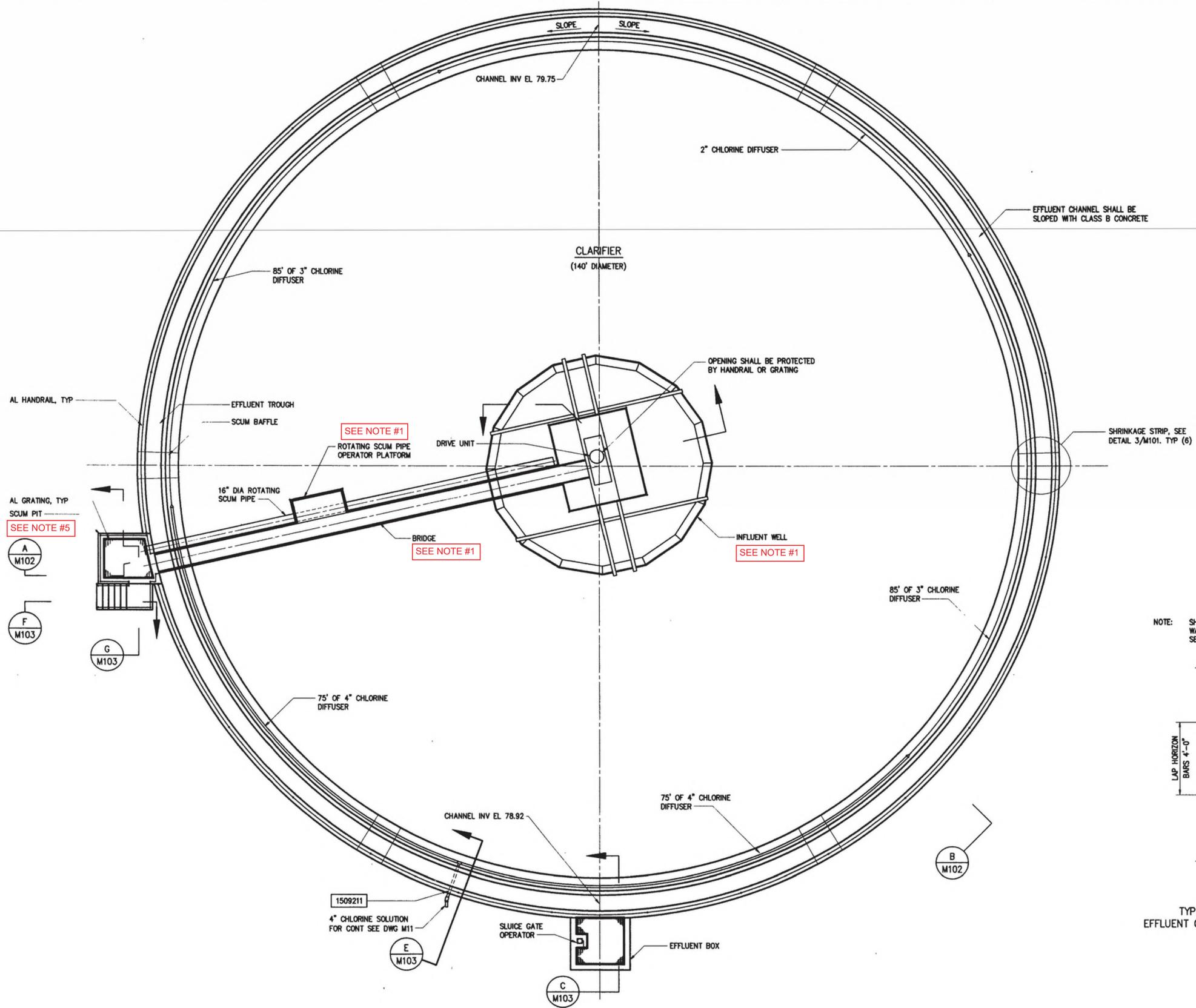
**HAZEN AND SAWYER**  
Environmental Engineers & Scientists  
RALEIGH, NORTH CAROLINA

**PUBLIC WORKS COMMISSION**  
CITY OF FAYETTEVILLE, NORTH CAROLINA  
**ROCKFISH CREEK WRF EXPANSION PHASE 1**  
**AND DISINFECTION IMPROVEMENTS**  
**AT THE CROSS CREEK WRF**

**CLARIFIER**  
**MECHANICAL/STRUCTURAL**  
**BOTTOM PLAN AND DETAILS**

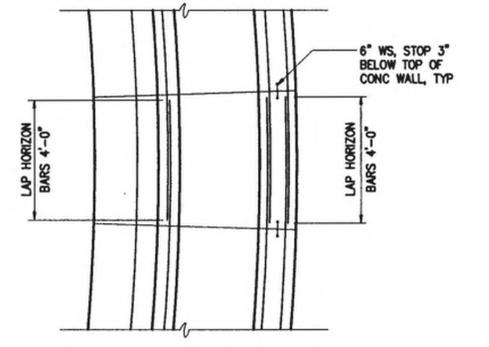
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	APRIL 1998
	H & S JOB NUMBER	30045
	CONTRACT NUMBER	1A
	DRAWING NUMBER	M100
	SHEET	24 OF 120

**RECORD DRAWING**



TOP PLAN  
1/8"=1'-0"

NOTE: SHRINKAGE STRIPS SHALL EXTEND FULL HEIGHT OF WALL AND SHALL NOT BE CAST UNTIL A MIN OF SEVEN DAYS AFTER ADJACENT WALLS ARE CAST.



TYPICAL SHRINKAGE STRIP  
EFFLUENT CHANNEL AND EXTERIOR WALL  
DETAIL 3  
3/8"=1'-0" M101

3	RECORD DRAWING	8/01	
2	CONSTRUCTION		
1	REGULATORY APPROVAL		
NDL	ISSUED FOR	DATE	BY

DESIGNED: MJM/JDW  
 DRAWN: JTB  
 CHECKED: *[Signature]*  
 PRD.J. ENGR: MJM  
 APPROVED: *[Signature]*

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 AT THE CROSS CREEK WRF

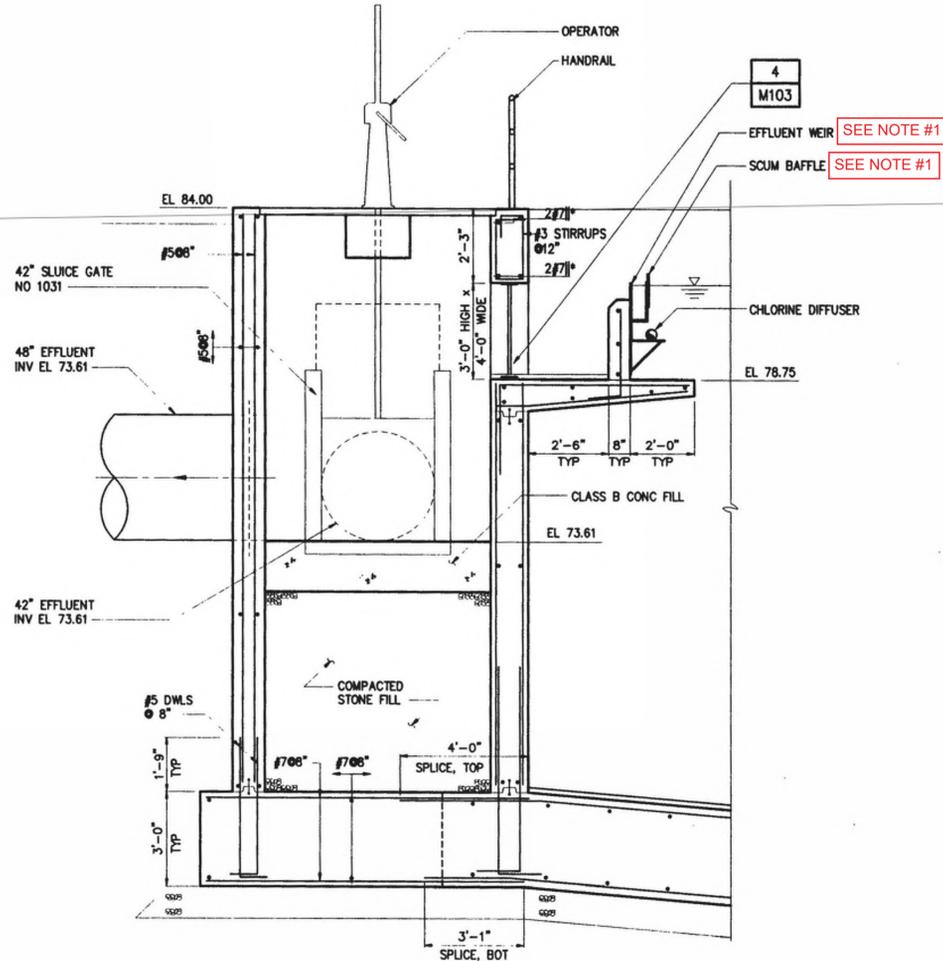
CLARIFIER  
 MECHANICAL/STRUCTURAL  
 TOP PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE: APRIL 1998
	H & S JOB NUMBER: 30045
	CONTRACT NUMBER: 1A
	DRAWING NUMBER: M101
	SHEET 25 OF 120

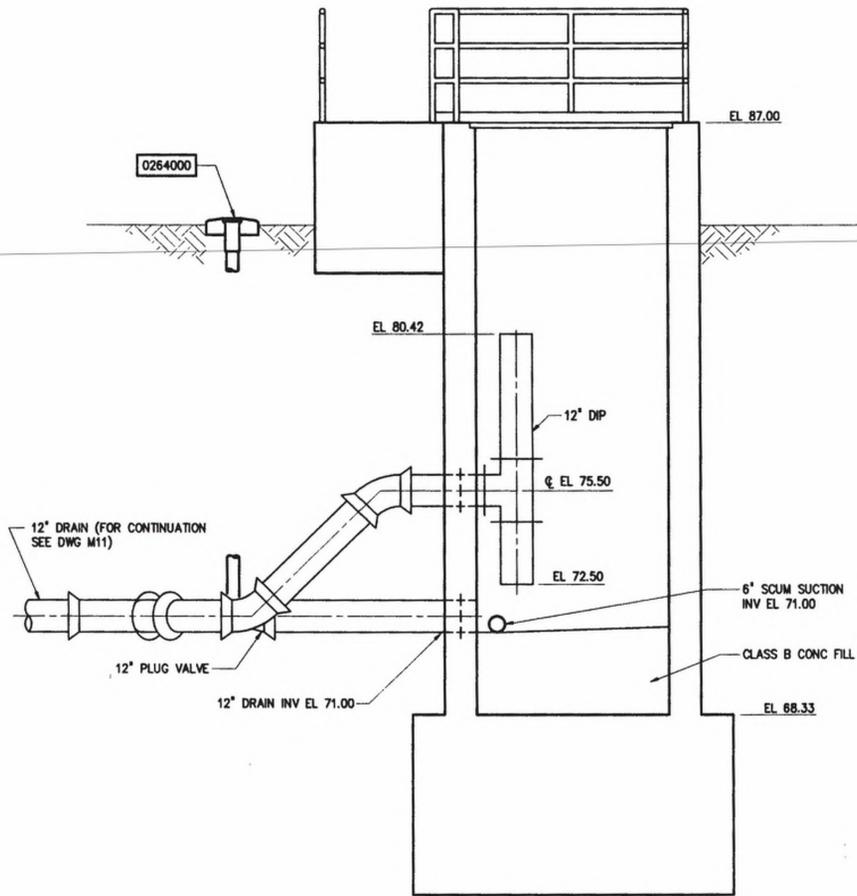
RECORD DRAWING



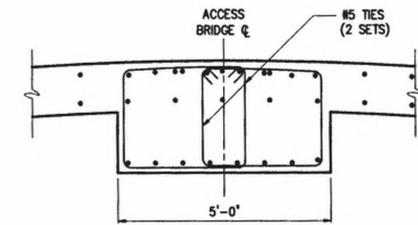
\* EXTEND #7 BARS 18 INCHES MIN EACH SIDE INTO ADJACENT WALLS



SECTION C  
3/8" x 1'-0" M100

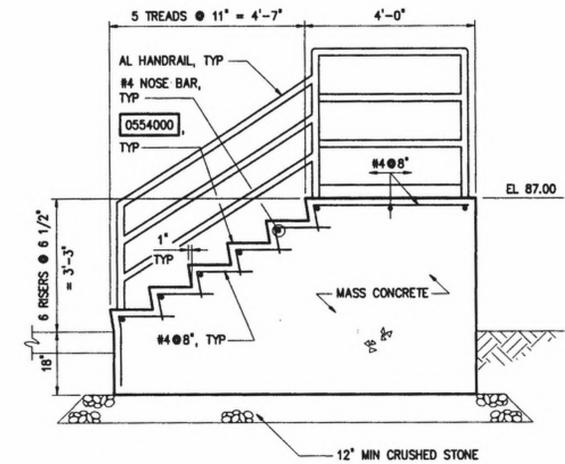


SECTION G  
3/8" x 1'-0" M100



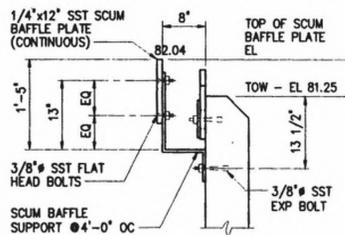
NOTE: HORIZONTAL WALL REINFORCING NOT SHOWN FOR CLARITY.

ACCESS BRIDGE  
SUPPORT CORBEL PLAN  
1/2" x 1'-0"

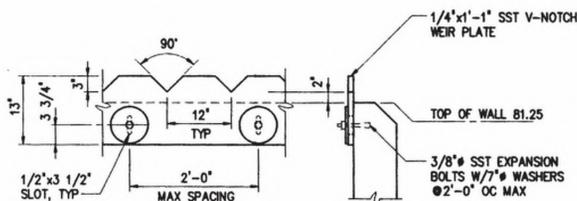


SECTION F  
3/8" x 1'-0" M101

NOTE: SCUM BAFFLE SUPPORT SHALL BE 6x8x15x3/8x4" LONG SST ZEE-SECTION FABRICATED FROM THREE PLATES WELDED TOGETHER WITH SINGLE-BEVEL-GROOVE WELDS. PROVIDE 1/2"x2 1/2" VERTICAL SLOT IN LEG AT EXP BT AND TWO 1/2"x2 1/2" HORIZONTAL SLOTS IN LEG AT FLAT HEAD BOLTS.

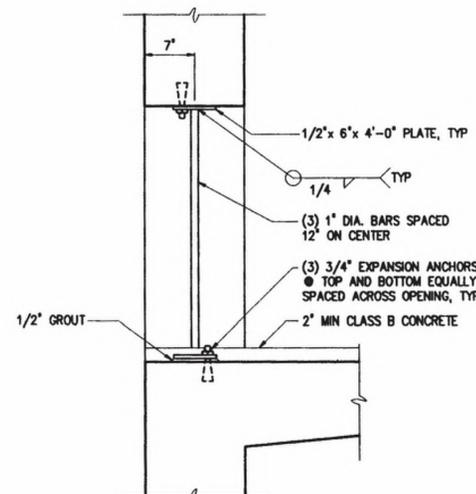


SCUM BAFFLE PLATE  
1517403R

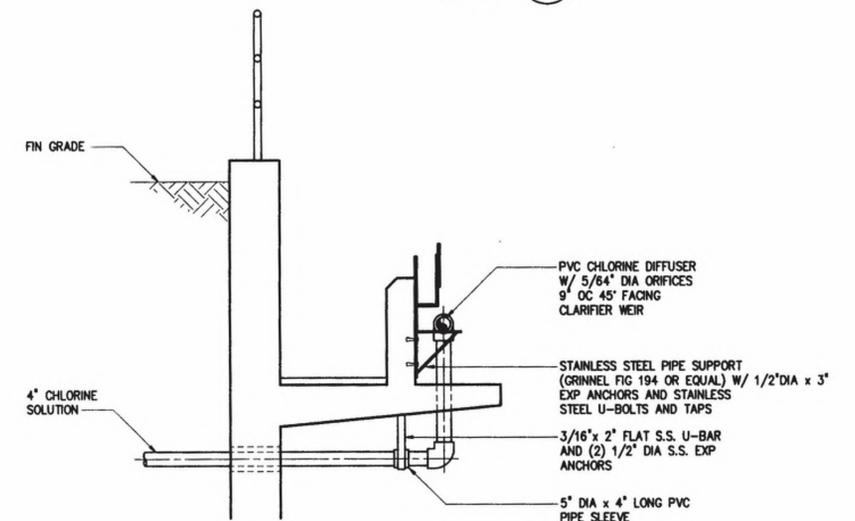


PROVIDE FOR WEIR ADJUSTMENT OF ±1 1/2" FROM THE ELEVATIONS INDICATED. ALL WEIRS SHALL BE INSTALLED TO WITHIN .01 FT OF ELEVATIONS INDICATED.

EFFLUENT V-NOTCH WEIR PLATE  
1517402R



DETAIL 4  
1" x 1'-0" M103



SECTION E  
1/2" x 1'-0" M101

RECORD DRAWING

DESIGNED	MJM/JDW
DRAWN	JTB
CHECKED	<i>[Signature]</i>
PRJ. ENGR	MJM
APPROVED	<i>[Signature]</i>
NO.	ISSUED FOR
3	RECORD DRAWING
2	CONSTRUCTION
1	REGULATORY APPROVAL
	DATE
	BY



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CLARIFIER  
MECHANICAL/STRUCTURAL  
SECTIONS AND DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	APRIL 1998
	H & S JOB NUMBER	30045
	CONTRACT NUMBER	1A
	DRAWING NUMBER	M103
	SHEET	27 OF 120

