

**SPECIFICATIONS,
CONTRACT DOCUMENTS
AND
DRAWINGS**

FOR

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

**CITY OF PINEVILLE
(OWNER)**

**MAYOR
JOSEPH "JOE" BISHOP**

**COUNCIL MEMBERS
RANDY O'NEAL
KEVIN DORN
CHRISTY FREDERIC
JOHN MARCASE
NATHAN MARTIN**

FEBRUARY 2026

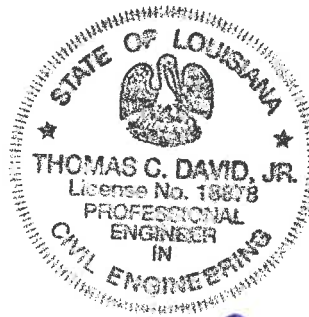


**PAN AMERICAN ENGINEERS, LLC
1717 JACKSON STREET (71301)
P. O. BOX 8599 (71306)
ALEXANDRIA, LOUISIANA
318-473-2100 PHONE
PAE JOB NO. 13191**

The following Contract Documents and Technical Specifications have been prepared under my direct supervision and guidance for City of Pineville in conjunction with the Plans and for the explicit use by the Owner and Contractors for the bidding and construction of the project:

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION



Thomas C. David, Jr. 1.8.26

Thomas C. David, Jr., P.E., P.L.S.
CIVIL ENGINEER

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

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CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 00

BIDDING AND CONTRACT DOCUMENTS

SECTION 00100

ADVERTISEMENT FOR BIDS

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

Separate sealed bids for the CITY OF PINEVILLE RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1 MAIN PUMP STATION, will be received by the City of Pineville at the Pineville City Hall, Mayor's Conference Room, 910 Main Street, Pineville, Louisiana 71360 until 2:00 P.M. on Thursday, March 12, 2026 and then at said office publicly opened and read aloud. Any bid received after the specified time and date will not be considered.

The Instructions to Bidders, Bid Form, Agreement Between Owner and Contractor, Forms of Bid Bond, Performance and Payment Bonds, Drawings and Specifications, and other Contract Documents may be examined at the following location:

PAN AMERICAN ENGINEERS, LLC
(Design Professional)
1717 JACKSON STREET (71301)
P. O. BOX 8599 (71306)
ALEXANDRIA, LOUISIANA
(318) 473-2100

The project consists of reconstruction of the Wastewater Treatment Plant Sewer Pump Station (Sewer Pump Station No. 1) including triplex pumping system, piping and valving, site piping and valving and 16" sewer force main, flow meters, pump station building renovation and addition, site paving and access drive, exhaust/ventilation system, gas detection system, fencing, and complete electrical and control system, and all related appurtenances.

Copies of the bidding documents shall be obtained from the office of Pan American Engineers, LLC upon deposit of \$150.00 for each set of documents; or from the electronic bid submittal option as noted in the Advertisement. The deposit on the first set of documents furnished to bonafide prime bidders will be fully refunded upon return of the documents, in good condition, no later than ten (10) days after receipt of bids. On other sets of documents furnished to bidders, the deposit less actual cost of reproduction will be refunded upon return of the documents, in good condition, no later than ten (10) days after receipt of bids.

Pursuant to Louisiana Revised Statute (L.R.S.) 38:2212.E.(1), Bidders have the option to secure bidding documents and submit bids electronically. Bidding documents may be secured from Central Bidding. Electronic bids for this project may be submitted through Central Bidding. The Central Bidding web address is www.CentralBidding.com. To register, or for assistance with completing an e-bid, contact Central Bidding at 225-810-4814 or 866-570-9620.

The OWNER reserves the right to reject any or all bids for just cause. Such actions will be in accordance with Title 38 of Public Bid Law.

In accordance with L.R.S. 38:2212.B.(1), the provisions and requirements stated in the Bidding Documents shall not be considered as informalities and shall not be waived.

Each Bidder must deposit with the bid, security in the amount of at least five percent (5%) of the total bid price, as described in the Instructions to Bidders. Bid bonds shall be written by a surety or insurance company meeting the requirements noted in L.R.S. 38:2218.

The successful Bidder shall be required to furnish a Performance Bond and Payment Bond, in an amount equal to 100% of the Contract amount, written by a surety or insurance company meeting the requirements noted in L.R.S. 38:2219 A.(1)(a), (b) and (c), or for Federally funded projects, must be listed as acceptable on the U.S. Department of Treasury Circular 570.

City of Pineville is an equal opportunity employer.

City of Pineville encourages all small and minority-owned firms and women's business enterprises to apply.

Any person with disabilities required special accommodations must contact the City of Pineville no later than seven (7) days prior to bid opening.

City of Pineville
Joseph "Joe" Bishop, Mayor
P.O. Box 3820
Pineville, Louisiana 71361

Publish Dates:

Friday, February 13, 2026

Friday, February 20, 2026

Friday, February 27, 2026

SECTION 00200

INSTRUCTIONS TO BIDDERS

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

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1. Defined Terms:

1.1 Terms used in these Instructions to Bidders which are defined in the General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to OWNER, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible and responsive Bidder to whom OWNER (on the basis of OWNER'S evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, the proposed Contract Documents (including all Addenda issued prior to receipt of Bids) and the Drawings.

2. Copies of Bidding Documents:

2.1 Complete sets of the Bidding Documents in the number and for the sum stated in the Advertisement or Invitation to Bid may be obtained from ENGINEER.

2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the WORK and do not confer a license or grant for any other use.

3. Qualifications of Bidders:

3.1 To demonstrate qualifications to perform the WORK, each Bidder must be prepared to submit within five days of OWNER'S request; written evidence, such as financial data, previous experience, present commitments, and other such data as may be called for in the General Conditions.

4. Examination of Contract Documents and Site:

4.1 It is the responsibility of each Bidder before submitting a Bid, to (a) examine the contract Documents thoroughly, (b) visit the site to become familiar with local Laws and Regulations that may affect cost, progress, performance or furnishing of the WORK, (c) consider federal, state and local Law and Regulations that may affect cost, progress, performance or furnishing of the WORK, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify ENGINEER of all conflicts, errors or discrepancies in the Contract Document.

4.2 Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to OWNER and ENGINEER by OWNERS of such Underground Facilities or others, and OWNER does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.

4.3 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 5.04 and 5.05 of the General Conditions.

4.4 Before submitting a Bid, each Bidder at Bidder's own expense, will be responsible to make or obtain any examinations, investigations, explorations, tests, studies and data concerning physical conditions (surface, subsurface and underground facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

4.5 On request in advance, OWNER will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up, and restore the site to its former condition upon completion of such explorations.

4.6 The lands upon which the WORK is to be performed, rights-of-way and easements for access thereto and other lands designated for use by CONTRACTOR in performing the WORK are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by CONTRACTOR. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by OWNER unless otherwise provided in the Contract Documents.

4.7 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the WORK required by the Contract Documents and

such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the WORK.

5. Interpretations and Addenda:

5.1 All questions about the meaning or intent of the Contract Documents are to be directed to the ENGINEER. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Questions received less than ten (10) days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER and ENGINEER.

6. Bid Security:

6.1 Each Bid must be accompanied by Bid Security made payable to OWNER in an amount of five percent of the Bidder's maximum Bid price and in the form of a certified or bank check or a Bid Bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions.

6.2 The time period for holding bids and Bid Security shall be in accordance with Louisiana Revised Statute (L.R.S.) 38:2215. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within fifteen (15) days after the Notice of Award, OWNER may annul the Notice of Award and the Bid Security of that Bidder will be forfeited. Bid Security with Bids which are not competitive will be returned within seven days after the Bid opening.

6.3 In accordance with L.R.S. 38:2218.C, all Bid Guaranty Bonds shall be written by a surety or insurance agency currently on the U.S. Department of Treasury Financial Management Service list of approved companies, or by a Louisiana domiciled insurance company with at least an A-rating in the latest printing of the A.M. Best's Key Rating Guide or by an insurance company in good standing licensed to write bonds either domiciled in Louisiana or owned by Louisiana residents.

7. Contract Time:

7.1 The number of days within which, or the dates by which, the WORK is to be Substantially Completed, and also completed and ready for final payment (the Contract Time) are set forth in the Agreement.

8. Liquidated Damages:

8.1 Provisions for liquidated damages are set forth in the Agreement.

9. Substitute Materials or Products - Prior Approvals:

9.1 In unusual cases where a closed specification has been justified for prior acceptance by the OWNER in conformance with L.R.S. 38:2291 and 38:2295.A and B, the naming of that product in the Drawings and Specifications will be followed by wording indicating that no substitution is permitted.

9.2 Otherwise, where the Drawings and Specifications name a certain brand, make, manufacturer, or uses a definite Specification, the Specifications are used only to denote the quality standard of product desired and do not restrict Bidders to the specific brand, make, manufacturer, or Specification named. The Specifications are only to set forth and convey to prospective Bidders the general style, type, character, and quality of product desired. Equivalent products may be acceptable.

9.3 If the Bidder desires to obtain approval of materials or equipment from other alternative suppliers or manufacturers to those identified in the Specifications or noted on the Drawings, a written request for a substitution shall be submitted to the ENGINEER at least seven (7) working days prior to the Bid date as specified in L.R.S. 38:2295.C. Each such request shall include the name of the material or equipment for which it is to be substituted and complete description of the proposed substitute including drawings, cuts, performance and test data and other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or Work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the Bidder. The ENGINEER'S decision of approval or disapproval of a proposed substitution shall be final. If ENGINEER approves any proposed substitution, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

9.4 After the receipt of Bids, the Contract, if awarded, will be on the basis of material and product described in the Drawings or specified in the Specifications without consideration of possible substitute of "or equal" items except as specified in 9.3 above.

10. Subcontractors, Suppliers and Others:

10.1 No CONTRACTOR shall be required to employ any Subcontractor, Supplier, other person or organization against whom CONTRACTOR has reasonable objection.

11. Bid Form:

11.1 The Bid Form is included with the Bidding Documents; additional copies may be obtained from the ENGINEER.

11.2 All blanks on the Bid Form must be completed in ink or by typewriter.

11.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign). The corporate address must be shown where indicated on the Bid Form.

11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear where indicated on the Bid Form and the official address of the partnership must be shown where indicated on the Bid Form.

11.5 All names must either be clearly written and legible or be typed or printed where indicated on the Bid Form.

11.6 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in where indicated on the Bid Form).

11.7 The address for communications regarding the Bid must be shown where indicated on the Bid Form.

12. Submission of Bids:

12.1 Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), and name and address of the Bidder, and Louisiana CONTRACTOR's license number, and accompanied by the Bid Security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelopes shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

12.2 Bidder shall submit with the Bid a Corporate Resolution (See Section 00900) or other similar written evidence of the authority of the person signing the Bid in accordance with L.R.S. 38:22.2.B.(2) and 38:2212.B.(5).

13. Modification and Withdrawal of Bids:

13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

13.2 If, within forty-eight (48) hours of the Bid opening, exclusive of Saturdays, Sundays and legal holidays, any Bidder who files a duly signed, and sworn written notice with OWNER to the satisfaction of OWNER that there was a patently obvious mechanical, clerical or mathematical error in its Bid, that Bidder may withdraw its Bid and the Bid Security will be returned as provided by L.R.S. 38:2214.C. Thereafter, the Bidder will be disqualified from future bidding on the Contract.

14. Opening of Bids:

14.1 Bids will be opened and (unless obviously nonresponsive) read aloud publicly. An abstract of the amounts of the base Bids and major alternates (if any) will be made available to Bidders after the opening of Bids.

15. Award of Contract:

15.1 For reasons of just cause, as provided by L.R.S. 38:2214.B., the OWNER reserves the right to reject any and all Bids. The OWNER will disregard all nonconforming, nonresponsive, unbalanced or conditional Bids. Bids which are unsigned or are not accompanied by the required Bid Security shall be irrevocably rejected. When one or more bid is rejected, the reason therefore shall be given. Bids may be considered irregular and subject to rejection if they show serious omission, unauthorized alteration of form, unauthorized alternate bids, incomplete or unbalanced unit prices, or irregularities of any kind.

15.2 In evaluating Bids, OWNER will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

15.3 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the WORK in accordance with the Contract Documents to OWNER'S satisfaction within the prescribed time.

15.4 If the contract is to be awarded, it will be awarded to the lowest Bidder whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project.

15.5 In accordance with L.R.S. 38:2215(A), the OWNER shall act not later than forty-five calendar days after the date of opening bids to award such public works contract to the lowest responsible and responsive bidder or to reject all bids. However, the OWNER and the lowest responsible and responsive bidder, by mutually written consent, may agree to extend the deadline for award by one or more extensions of thirty calendar days.

16. Contract Security:

16.1 Article 6 of the General Conditions sets forth OWNER'S requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by the required Performance and Payment Bonds.

16.2 In addition to the requirements in Article 6, in order to be acceptable to the OWNER, a surety company issuing Bid Guaranty Bonds, or 100% Performance/Payment Bonds, called for in these Specifications, shall meet and comply with the following minimum standards:

A. Surety must be admitted to do business in the State of Louisiana and shall comply with the provisions of L.R.S. 38:2241. The Surety Company shall be in conformance with L.R.S. 38:2219.

B. Surety shall have been in business and have a record of successful continuous operations for at least five (5) years.

C. Attorneys-in-fact who sign bid bonds or performance/payment bonds must file with such bond a certified copy of their power of attorney to sign such bond.

D. Agents of surety companies must list their name, address and telephone number on all bonds.

E. The life of the bonds shall extend twelve (12) months beyond the date of final payment and shall contain a waiver of alteration to the terms of the Contract, extensions of time and/or forbearance on the part of the OWNER.

17. Signing of Agreement:

17.1 When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with other necessary Contract Documents attached. Within fifteen (15) days thereafter CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds. Within ten (10) days thereafter OWNER shall deliver one (1) fully signed counterpart to CONTRACTOR. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

17.2 However, as noted in L.R.S. 38:2215.B., if all documents required of lowest responsive and responsible bidder have been provided to the OWNER, the Agreement shall be executed not later than sixty (60) calendar days after the date of award.

18. Retainage:

18.1 Retainage of 10% of the value of WORK completed and materials stored on-site shall be deducted from the CONTRACTOR'S Application for Payment for contract prices up to \$500,000.00.

18.2 Retainage of 5% of the value of WORK completed and materials stored on-site shall be deducted from the CONTRACTOR'S Application for Payment for contract prices of \$500,000 or more.

19. Contractor's License Certification:

19.1 If the bid submitted for this project exceeds fifty thousand dollars, in accordance with L.R.S. 37:2163.A.(1) the Bidder shall show his license number on the bid envelope; and, by placement of the authorized signature of Bidder on the Louisiana Uniform Public Work Bid Form, such signature shall be deemed as a certification that the Bidders holds an active license under the provisions of Title 37: Chapter 24. Contractors.

20. Issuance of Bidding Documents:

20.1 No Bidding Documents will be issued later than twenty-four (24) hours of the date set for receiving bids, as provided by L.R.S. 37:2163.B.

20.2 Bids shall be received from Bidders only on the Bid Form in the Bidding Documents which is issued to him in his name, as provided in the L.R.S. 37:2163. A single bid shall be submitted for all portions of the Contract Work.

21. Issuance of Addenda Deadline:

21.1 No addenda will be issued within seventy-two (72) hours of the advertised bid time, exclusive of Saturdays, Sundays and legal holidays without resulting in the extending the bid period for at least seven (7) working days but not more than twenty-one (21) working days, as provided by L.R.S. 38:2212.O.(2)(b).

22. Bids to Remain Open:

22.1 As provided by L.R.S. 38:2215A., all Bids shall remain open for forty-five (45) calendar days after the day of the Bid opening, however as provided under L.R.S. 38:2215.D, these provisions are not applicable for projects requiring the sale of bonds or financed in whole or in part by federal or other funds which will not be readily available at the time bids are opened.

22.2 Extensions of time when Bids shall remain open beyond the forty-five (45) calendar day period (or seventy-five (75) calendar days for federal funding projects) specified in L.R.S. 38:2215.A may be made only by mutual agreement between the OWNER and the lowest responsible bidder by one or more thirty (30) calendar day extensions.

23. Discrepancies on Bid Form:

23.1 For the purpose of evaluation of bids, the following will be utilized in resolving arithmetic discrepancies found on the face of the Bid Form as submitted by bidders:

- A. Obviously misplaced decimal points will be corrected; and,
- B. In case of discrepancy between unit price and unit price extension, the unit price will govern; and,
- C. Apparent errors of unit price extension(s) will be corrected; and
- D. Apparent errors in addition of unit price extension(s) will be corrected; and
- E. If a cap amount has been established for an item, such as for Mobilization, and the amount that is bid exceeded the established cap amount, the amount bid for said item shall be reduced to the established cap amount.

23.2 The Bids shall be evaluated on the basis of the unit prices and totals of unit price extensions arrived at by resolution of arithmetic discrepancies as provided above, and the bid will be so reflected on the abstract of bids.

24. Required Certifications, Attestations, Etc.

24.1 In accordance with L.R.S. 38:2227 and 38:2212.10.C, the low bidder on this project must submit the completed Attestation/Affidavit Form (Past Criminal Conviction of Bidders, Verification of Employees, and Certification Regarding Unpaid Workers Compensation Insurance) (Section 00920). The forms shall be submitted to the ENGINEER within 10 days after the opening of bids.

24.2 Before award of the contract, the successful Bidder shall furnish to the OWNER the following documents:

- A. CONTRACTOR Non-Collusion Affidavit (L.R.S. 38:2224) (Section 00910).
- B. All applicable insurance documents.

25. Conflict Between Drawings and Specifications:

25.1 Where an obvious conflict exists between the Drawings and Specifications, the ENGINEER shall decide which governs and the CONTRACTOR shall comply with the decision. Such decision shall not be grounds for additional payment to the CONTRACTOR, i.e. the CONTRACTOR shall include the price of the more expensive alternative in his bid.

26. Drawings and Specifications Issued to Successful Bidder

26.1 The successful Bidder for this Contract will be furnished four (4) complete sets of Drawings and Specifications at no cost. If, during the prosecution of the work the CONTRACTOR should deem it necessary to have additional sets of Drawings and Specifications they may be purchased from the ENGINEER at the cost of reproduction.

27. Sales And Use Tax Exemption

27.1 In accordance with applicable rules adopted and promulgated by the Louisiana Department of Revenue, the OWNER intends to designate the CONTRACTOR and all subcontractors as its agents for the purchase and lease of materials, supplies or equipment for this Project. The CONTRACTOR and all subcontractors shall accept the agency designation. The designation and acceptance thereof shall be made on the form prescribed by the Louisiana State Department of Revenue which form shall be part of the contract between the OWNER, and the CONTRACTOR. A copy of this form is included in Section 00450.

27.2 The agency relationship between the OWNER and the CONTRACTOR and all subcontractors shall relieve the CONTRACTOR and subcontractors (1) from paying any state or local sales or state or local use taxes on materials, supplies or equipment which is affixed to and/or made a part of the real estate of the project or work or which is permanently incorporated into the project or work and, (2) from paying any state or local use taxes on any materials, supplies or equipment which is leased and used exclusively for the project or work. Accordingly, in preparing their bids and computing costs, the CONTRACTOR and subcontractors shall not consider sales and/or use taxes which would otherwise be due.

27.3 The CONTRACTOR and subcontractors shall furnish a copy of such certificate to all vendors or suppliers of any of the materials, supplies or equipment described above.

27.4 The CONTRACTOR and subcontractors shall make all purchases and leases on behalf of and as the agent of the OWNER.

27.5 Rules and regulations of the Louisiana Department of Revenue shall prevail over any conflicting provisions or specifications of the Contract.

27.6 The CONTRACTOR shall enter into a separate Contract with the OWNER prior to issuance of the Notice to Proceed as it relates to the agent arrangement for sales tax exemptions. A copy of the contract is included in Section 00460.

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SECTION 00300
LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: City of Pineville BID FOR: Renovations to W.W.T.P. Pump Station No. 1
P.O. Box 3820 Main Pump Station
Pineville, Louisiana 71361 PAE Job No. 13191
(Owner to provide name and address of owner) *(Owner to provide name of project and other identifying information)*

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by:

Pan American Engineers, LLC and dated: February 2026
(Owner to provide name of entity preparing bidding documents.)

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA**: (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) _____

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" * but not alternates) the sum of:

_____ Dollars (\$ _____)

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1: *Owner to provide description of alternate and state whether add or deduct* for the lump sum of:

_____ N/A Dollars (\$ N/A _____)

Alternate No. 2: *Owner to provide description of alternate and state whether add or deduct* for the lump sum of:

_____ N/A Dollars (\$ N/A _____)

Alternate No. 3: *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

_____ N/A Dollars (\$ N/A _____)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

LOUISIANA CONTRACTOR'S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER:** _____

DATE: _____

THE FOLLOWING ITEMS ARE TO BE INCLUDED WITH THE SUBMISSION OF THIS LOUISIANA UNIFORM PUBLIC WORK BID FORM:

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise, it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** **A CORPORATE RESOLUTION OR WRITTEN EVIDENCE** of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5).

BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LA R.S. 38:2218(A) attached to and made a part of this bid.

SECTION 00400

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto the City of Pineville, as OWNER in the penal sum of _____ DOLLARS (\$) for the payment of which sum well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this ____ day of _____, 2026. The Condition of the above obligation is such that whereas the Principal has submitted to the City of Pineville, a BID, attached hereto and hereby made a part thereof, to enter into a contract in writing, for Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station.

NOW THEREFORE,

- a. If said BID shall be rejected, or
- b. If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Agreement attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor and 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 extensions.

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.

_____ PRINCIPAL

BY:

_____ TITLE

_____ SURETY

BY:

_____ TITLE

IMPORTANT: Bid Guaranty Bonds: In accordance with Louisiana Revised Statute 38:2218.C, all Bid Guaranty Bonds shall be written by a surety or insurance agency currently on the U.S. Department of Treasury Financial Management Service list of approved companies, or by a Louisiana domiciled insurance company with at least an A-rating in the latest printing of the A.M. Best's Key Rating Guide or by an insurance company in good standing licensed to write bonds either domiciled in Louisiana or owned by Louisiana residents.

SECTION 00450

R-1020 (4/12)



**Designation of Construction Contractor
as Agent of a Governmental Entity
Sales Tax Exemption Certificate**

City of Pineville

_____, an agency of the United States government, or an agency, board, commission, or instrumentality of the State of Louisiana or its political subdivisions, including parishes, municipalities and school boards, does hereby designate the following contractor as its agent for the purpose of making sales tax exempt purchases on behalf of the governmental body:

Name of Contractor		
Address		
City	State	ZIP

This designation of agency shall be effective for purchases of component construction materials, taxable services and leases and rentals of tangible personal property for the following named construction project:

Construction Project Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station	Contract Number
--	-----------------

This designation and acceptance of agency is effective for the period

Beginning Date (mm/dd/yyyy)	End Date (mm/dd/yyyy)
-----------------------------	-----------------------

Purchases for the named project during this period by the designated contractor shall be considered as the legal equivalent of purchases directly by the governmental body. Any materials purchased by this agent shall immediately, upon the vendor's delivery to the agent, become the property of this government entity. This government entity, as principal, assumes direct liability to the vendor for the payment of any property, services, leases, or rentals made by this designated agent. This agreement does not void or supersede the obligations of any party created under any construction contract related to this project, including specifically any contractual obligation of the construction contractor to submit payment to the vendors of materials or services for the project.

This contractor-agent is not authorized to delegate this purchasing agency to others; separate designations of agency by this governmental entity are required for each contractor or sub-contractor who is to purchase on behalf of this governmental entity. The undersigned hereby certify that this designation is the entirety of the agency designation agreement between them. In order for a purchase for an eligible governmental entity through a designated agent to be eligible for sales tax exemption, the designation of agency must be made, accepted, and disclosed to the vendor before or at the time of the purchase transaction.

Designation of Agency			Acceptance of Agency		
Signature of Authorized Designator		Date (mm/dd/yyyy)	Signature of Contractor or Subcontractor Authorized Acceptor		Date (mm/dd/yyyy)
Name of Authorized Designator Joseph "Joe" Bishop, Mayor			Name of Contractor's or Subcontractor's Acceptor		
Name of Governmental Entity City of Pineville			Name of Contractor		
Address P.O. Box 3820			Address		
City Pineville	State LA	ZIP 71361	City	State	ZIP

This designation of agency form, when properly executed by both the contractor and the governmental entity, shall serve as evidence of the sales tax exempt status that has been conferred onto the contractor. No other exemption certificate form is necessary to claim exemption from sales taxes. The agency agreement evidenced by this sales tax exemption certificate must be implemented at the time of contract execution with the governmental entity. The contract between the governmental entity and his agent must contain provisions to authenticate the conferment of agency.

SECTION 00460

SALES TAX EXEMPTION CONTRACT

CONTRACT FOR L.R.S. 47:301(8)(c) SALES AND TAX EXEMPTION

WHEREAS, _____, (Contractor), has been awarded a Contract with CITY OF PINEVILLE, (Owner), a public entity/political subdivision, in accord with the Louisiana public bid Law for the following public project:

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

WHEREAS, the Contractor and/or its subcontractors on this project, in their execution of the Project will use and/or purchase tangible property and/or goods which will be consumed in completing the Project or which will be incorporated into the Project;

WHEREAS, the Contractor and/or its subcontractors on this project, in bidding on the Project, did not include sales and use taxes on tangible property and/or goods which will be consumed in completing the Project or which will be incorporated into the Project;

WHEREAS, the Owner wishes to avail itself of the sales and use tax exemption afforded to it by L.R.S. 47:301(8)(c);

WHEREAS, the Owner wishes to avoid paying sales and use taxes when it has no legal obligation to do so;

WHEREAS, the Owner's unnecessary payment of sales and use taxes could be a violation of its duty to prudently administer the public funds in its charge;

WHEREAS, the parties may avoid the unnecessary payment of sales and use taxes if the Contractor or its subcontractors on this project act as the Owner's agent and/or instrumentality for the purchase and/or use of tangible property which will be consumed in completing the Project or which will be incorporated into the Project;

WHEREAS, the Contractor and its subcontractors on this project and the Owner mutually agree to a contract of agency and/or instrumentality between them for the purchase and/or use of tangible property which will be consumed in completing the Project or which will be incorporated into the Project and thereby avoid the unnecessary payment of sales and/or use taxes;

NOW THEREFORE the Owner appoints the Contractor and its subcontractors on this project as its agent and/or instrumentality for purposes of the purchase and/or use of tangible property which will be consumed in completing the Project or which will be incorporated into the Project subject to the following conditions:

All purchases under this Contract shall be made from the public funds paid to the Contractor and/or its subcontractors on this project and shall be charged to the contract price for the Project. The Contractor and/or its subcontractors on this project shall obtain invoices for all purchases made under this Contract. The invoices shall bear the name and number of the Project as listed above. All materials and equipment shall be purchased by the Contractor and/or its subcontractors on this project in the name of the Owner using funds that are accounted for to the Owner and that are traced to public funds.

Title to all property purchased under this Contract shall immediately pass to the Owner at the time of the purchase, but the Contractor and/or its subcontractors on this project shall be the depositary or custodian of the property until the Owner accepts the Project as substantially complete at which time this Contract shall terminate.

In the event that the Contractor and/or its subcontractors on this project are subject to a sales or use tax audit by either the State of Louisiana or a local government subdivision and the taxing authority assess taxes on any materials or equipment incorporated into the Project or use in its work, the Owner shall be responsible for defending the tax-exempt status or the purchases at issue unless the tax liability is due to the non-compliance to this contract by the Contractor and/or its subcontractors. Moreover, should the taxing authority prevail in imposing its sales or use tax, the Owner shall be ultimately liable for remitting to the taxing authority the taxes, interest and penalties ultimately found due unless the Contractor and/or its subcontractors on this project have failed to comply with this Contract, in which event the Contractor and/or its subcontractors shall be solely responsible for the payment of taxes found to be due.

This Contract does not limit or otherwise alter Contractor's responsibilities (1) to fully insure materials and equipment to be furnished by Contractor; (2) to insure the work at all times prior to substantial completion; (3) to fully warrant all materials and equipment furnished by Contractor; (4) to alter the method or time frames for payments established under the Project; (5) to change the rights of the Owner to accept or reject the work or any part thereof or alter the manner or time frames in which inspections may be made by the Engineer or Architect on behalf of the Owner; (6) to provide for the safety and protection of materials and equipment whether in storage on or off site and regardless whether titled to the contracting agency as part of the work; (7) to maintain liability and property insurance, specifically including coverage for damages to the materials and equipment prior to final acceptance and claims for damages because of bodily injury, sickness, or death and any of the Contractor's and/or its subcontractors on this project employees or any person other than the Contractor's and/or its subcontractors on this project employees; (8) to properly correct the work as required by the Engineer or Architect or diminish the Owner's and Engineer's or Architect's right to reject any portions of the work.

The Contractor accepts its appointment as indicated by the signature of its authorized agent on the date shown below. The subcontractors of the Contractor on this project shall accept this appointment by their execution of a subcontract with the Contractor to which this Sales Tax Exemption Agreement shall be incorporated by reference and attached as an Exhibit thereto.

CONTRACTOR

CITY OF PINEVILLE

SECTION 00500

NOTICE OF AWARD

Date: _____

Project: Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station	
Owner: City of Pineville	Owner's Contract No.:
Contract:	Engineer's Project No.: 13191
Bidder:	
Bidder's Address:	

You are notified that your Bid dated ____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station.

The Contract Price of your Contract is _____ Dollars (\$_____).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

Four (4) copies of the proposed Contract Documents accompany this Notice of Award.

Four (4) sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within fifteen (15) days of the date you receive this Notice of Award.

1. Deliver to the Owner four (4) fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Paragraph 16), General Conditions (Article 6.01).
3. Other conditions precedent:
 1. *Provide Certification of Insurance as specified (SC-6.03 and SC-6.04)*
 2. *Provide affidavits, certificates, and required documents as specified in the Instructions to Bidders (Paragraph 24).*

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

City of Pineville
Owner

By: _____
Authorized Signature

Project Engineer
Title

SECTION 00600

**AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT
(LUMP SUM)**

THIS AGREEMENT is by and between _____ CITY OF PINEVILLE _____ (“Owner”) and
_____ (“Contractor”).

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The project consists of reconstruction of the Wastewater Treatment Plant Sewer Pump Station (Sewer Pump Station No. 1) including triplex pumping system, piping and valving, site piping and valving and 16” sewer force main, flow meters, pump station building renovation and addition, site paving and access drive, exhaust/ventilation system, gas detection system, fencing, and complete electrical and control system, and all related appurtenances.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

City of Pineville - Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Pan American Engineers, LLC which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

3.02 Engineer’s contact information is as follows:

*Pan American Engineers, LLC
1717 Jackson Street (P. O. Box 8599)
Alexandria, Louisiana 71301 (71306)
(318) 473-2100 telephone*

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

- A. The Work will be substantially completed within 300 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 345 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty),
1. *Substantial Completion:* Contractor shall pay Owner \$500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion until the Work is substantially complete.
 2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$500.00 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment
 3. Liquidated damages for failing to timely attain Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents a Lump Sum total of _____ Dollars (\$_____).

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.
1. Prior to final completion and acceptance of all Work covered by the Contract Documents, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages. Retainage indicated below does not include withholdings for known incomplete work. Such withholdings are not included in calculating the retainage but are additional monies withheld.
 - a. For Contract Prices of \$500,000 or less, 90% of Work completed and/or cost of materials and equipment not incorporated in the Work (with the balance of 10% being retainage).
 - b. For Contract Prices in excess of \$500,000, 95% of Work completed and/or cost of materials and equipment not incorporated in the Work (with the balance of 5% being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to the applicable percent based on the preceding Paragraph 6.02.A.1 of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 15.01.E of the General Conditions and less the value of Engineer's estimate of the Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer.

ARTICLE 7 – CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of the following:
1. This Agreement (pages 1 to 7, inclusive).
 2. Performance bond (pages 1 to 4, inclusive).
 3. Payment bond (pages 1 to 4, inclusive).

4. General Conditions (pages 1 to 70, inclusive).
5. Supplementary Conditions (pages 1 to 16, inclusive).
6. Specifications as listed in the table of contents of the Project Manual.
7. Drawings consisting of 44 sheets with each sheet bearing the following general title: City of Pineville, Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station.
8. Addenda (numbers _____ to _____, inclusive).
9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages 1 of 1, inclusive).
 - b. Bid Bond
 - c. Documentation submitted by Contractor.
 - 1) Section 00910- Attestations/Affidavits
(L.R.S. 38:2227 - Past Criminal Convictions of Bidders)
(L.R.S. 38:2212.10 - Verification of Employees)
(L.R.S. 23:1726(B) - Certification Regarding Unpaid Workers Compensation Insurance)
(L.R.S. 38:2216.1 – Prohibition of Contracts with Companies that Discriminate Against Firearm and Ammunition Industries)
(L.R.S. 38:2224 - Contractor Non-Collusion Affidavit)
10. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages 1 of 1, inclusive).
 - b. Work Change Directives.
 - c. Change Orders.
- B. The documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS, CERTIFICATIONS AND STIPULATIONS

8.01 Contractor's Representations

- A. In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. 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 Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
 7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work
 8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
 9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
 10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
 11. Contractor's entry into this Contract 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.

8.02 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

- A. Owner stipulates that the General Conditions that are made a part of this Contract are EDCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and the Owner has shown all modifications to the standard wording of such published document to the Contractor in the Supplementary Conditions.

ARTICLE 9 – MISCELLANEOUS

9.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

9.02 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on _____ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR

CITY OF PINEVILLE

By: _____

By: _____

Title: Joseph "Joe" Bishop, Mayor

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Address for giving notices:

Address for giving notices:

P.O. Box 3820

Pineville, LA 71361

License No.: _____

SECTION 00620
PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*): SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

City of Pineville
P.O. Box 3820
Pineville, Louisiana 71361

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*): Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 - 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other

claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

- 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: None

FOR INFORMATION ONLY – *(Name, Address and Telephone)*

Surety Agency or Broker:

Owner's Representative *(Engineer or other party)*: Pan American Engineers, LLC, P. O. Box 8599, Alexandria, Louisiana 71306

SECTION 00630
PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

City of Pineville
P.O. Box 3820
Pineville, Louisiana 71361

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*): Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station
BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

(Seal)
Contractor's Name and Corporate Seal

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for

the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

- 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;
 - 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: None

FOR INFORMATION ONLY – (*Name, Address, and Telephone*)

Surety Agency or Broker:

Owner’s Representative (*Engineer or other*): Pan American Engineers, LLC, P.O. Box 8599, Alexandria, Louisiana 71306

SECTION 00640

NOTICE TO PROCEED

Date: _____

Project: Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station

Owner: City of Pineville	Owner's Contract No.:
Contract:	Engineer's Project No.: 13191
Contractor:	
Contractor's Address:	

You are notified that the Contract Times under the above Contract will commence to run on _____. On that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the number of days to achieve Substantial Completion is 300, and the number of days to achieve readiness for final payment is 345.

Also, before you may start any Work at the Site, you must:

- 1) Notify ENGINEER'S office as to date crews will move to the site so as to coordinate field control and layout work.
- (2) Provide ENGINEER'S office with detailed submittal data on all material to be incorporated into project (Section 01340 - Shop Drawings, Samples and Project Date) (5 copies of all data required.)

City of Pineville
Owner

Given by:

Authorized Signature

Project Engineer
Title

Date

SECTION 00650
CHANGE ORDER

No. _____

Date of Issuance: _____ Effective Date: _____

Project: Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station	Owner: City of Pineville	Owner's Contract No.:
--	-----------------------------	-----------------------

Contract:	Date of Contract:
-----------	-------------------

Contractor:	Engineer's Project No.: 13191
-------------	-------------------------------

You are directed to make the following change(s) in this contract: Attach itemized breakdown in accordance with L.R.S. 38:2212M.(5). Also, please give brief description and justification of change(s) below.

The Contract Documents are modified as follows upon execution of this Change Order:

Description: _____

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:

CHANGE IN CONTRACT TIMES:

Original Contract Price:

\$ _____

Original Contract Times: Working days Calendar Days
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

\$ _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

Substantial completion (days): _____
Ready for final payment (days): _____

Contract Price prior to this Change Order:

\$ _____

Contract Times prior to this Change Order:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:

\$ _____

[Increase] [Decrease] of this Change Order:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

Contract Price incorporating this Change Order:

\$ _____

Contract Times with all approved Change Orders:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

RECOMMENDED:
By: _____
Pan American Engineers, LLC

ACCEPTED:
By: _____
City of Pineville

ACCEPTED:
By: _____
Contractor (Authorized Signature)

Date: _____

Date: _____

Date: _____

Approved by Funding Agency (if applicable): _____

Date: _____

(Note: Before any Change Order is routed to Owner for approval it must first be routed to the Funding Agency for review).

SECTION 00670

FIELD ORDER

No. _____

Date of Issuance: _____ Effective Date: _____

Project: Renovations to W.W.T.P. Pump Station No. 1 Main Pump Station	Owner: City of Pineville	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.: 13191

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 11.04.A, for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

Reference: _____
(Specification Section(s)) (Drawing(s) / Detail(s))

Description:

Attachments:

Engineer:

Receipt Acknowledged by Contractor: _____ Date: _____

Copy to Owner

**STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT**

Prepared By



Endorsed By



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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer 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 Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *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.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner 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.

33. *Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Project Representative (PR) includes any assistants or field staff of Project Representative.
34. *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.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *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.
37. *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 Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *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.
40. *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.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of 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 of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, 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.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *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, 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.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* 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 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 Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
1. does not conform to the Contract Documents;
 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. 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.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. 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 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on 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.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents 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 Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document 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. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or 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.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. 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, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer 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 prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to 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 Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* 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 Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. 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
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument 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 property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or 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. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, 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, or to improvements, structures, utilities, or similar facilities located at such adjacent lands 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.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion 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. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
 - 2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
 - 3. Technical Data contained in such reports and drawings.
- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.
- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.
- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 - 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 - 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner 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 permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, 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:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. 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 making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. 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, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, 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:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. 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, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for 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.
- D. Contractor shall be responsible for controlling, containing, and duly 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.
- E. 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 as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and 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.
- G. If Owner 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, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *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 maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. 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 will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, 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 must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. 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 Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) 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;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria:* Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner 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 Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an 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 Owner or Engineer, 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 will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

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

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, 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 Owner 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 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *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.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, 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.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. 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.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that 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.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will 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.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) 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
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. 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.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission 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.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will 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.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all 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 damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
 - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.01 *Owner’s Representative*

- A. Engineer will be Owner’s representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner’s representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer’s efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer’s consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer’s Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer’s authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer’s authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner’s delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer’s authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. 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 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. 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 Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates 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.

11.06 *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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. 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 (subject to the provisions of Paragraph 13.03);
 2. 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 not necessarily in accordance with Paragraph 11.07.C.2); or
 3. 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 (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. 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:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must 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.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *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 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, 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 believe the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: 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 will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, 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, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction 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 with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give 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. Owner shall retain and pay for the 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 Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- 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 Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. 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 will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, 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 Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* 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 Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* 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 Owner 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 Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer 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 will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require 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 Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 1. 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 the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 2. 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, 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 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient 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 Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner 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.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to 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.
 - 2. 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 at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon 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 under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. 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 Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. 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.

D. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. Reductions in Payment by Owner

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from 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;

- b. 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;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner 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;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) 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. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner'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 Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's 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. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner 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.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner 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.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, 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 (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. 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 from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all 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). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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 if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, 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.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and 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 directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner 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:
 - 1. Contractor's persistent 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);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner 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 Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.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 Owner, 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 Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. 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
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 Giving Notice

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 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.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. 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.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor 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.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; 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.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00710

**SUPPLEMENTARY CONDITIONS
OF THE CONSTRUCTION CONTRACT**

Prepared By

Pan American Engineers, LLC

For

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

SC-1.01 *Definitions and Terminology*

SC-1.01.33 Delete Paragraph 1.01.33 in its entirety and insert the following in its place:

Project Representative - The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Project Representative (PR) includes any assistants or field staff of Project Representative. (Where "Resident Project Representative" may be found within the General Conditions it shall mean "Project Representative").

SC-2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

SC-2.01.A Add the following sentence at the end of Paragraph 2.01.A.:

The Owner shall record within thirty (30) days the Agreement Between Owner and Contractor and Performance and Payment Bond with the Clerk of Court in the Parish in which work is to be performed in accordance with Louisiana Revised Statute (L.R.S.) 38:2241A(2).

SC-2.02 *Copies of Documents*

SC-2.02.A Delete Paragraph 2.02.A in its entirety and insert the following in its place:

A. Owner shall furnish to Contractor up to four (4) printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

SC-4.01 *Commencement of Contract Times; Notice to Proceed*

SC-4.01.A Delete Paragraph 4.01.A in its entirety and insert the following in its place:

- A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. In accordance with L.R.S. 38:2215.C; A Notice to Proceed shall be issued within 30 days of the Effective Date of the Agreement; or the Notice to Proceed may be given at any time mutually agreed to by the Owner and Contractor.

SC-4.05 *Delays in Contractor's Progress*

SC-4.05.A Delete Paragraph 4.05.A in its entirety and insert the following in its place:

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Times.

SC-4.05.C Add the following paragraph immediately at after Paragraph 4.05.C.4:

5. *Weather-Related Delays*

- a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled.
- b. The existence of abnormal weather conditions will be determined on a month-by-month basis in accordance with the following:
 - 1) Every workday on which the total precipitation occurring between 7:00 p.m. on the preceding day (regardless of whether such preceding day is a workday) through 7:00 p.m. on the workday in question equals or exceeds one inch (1") of precipitation (as rain equivalent) will be considered a "bad weather day".
 - 2) Determination of actual bad weather days during performance of the Work will be based on the weather records measured and recorded by the nearest public weather monitoring station.

- 3) Contractor shall anticipate the number of foreseeable bad weather days per month indicated in the Chart below:

January	<u>11</u> days	February	<u>10</u> days
March	<u>8</u> days	April	<u>7</u> days
May	<u>5</u> days	June	<u>6</u> days
July	<u>6</u> days	August	<u>5</u> days
September	<u>4</u> days	October	<u>3</u> days
November	<u>5</u> days	December	<u>8</u> days

- 4) In each month, every bad weather day exceeding the number of foreseeable bad weather days established in SC.4.05.C.5.b.3 will be considered as "abnormal weather conditions." The existence of abnormal weather conditions will not relieve Contractor of the obligation to demonstrate and document that delays caused by abnormal weather are specific to the planned work activities or that such activities thus delayed were on Contractor's then-current Progress Schedule's critical path for the Project.

SC-4.05.D Delete Paragraph 4.05.D in its entirety and insert the following in its place:

D. Contractor's entitlement to an adjustment of Contract Times is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
2. Adjustments of Contract Times are subject to the provisions of Article 11.

SC-5.01 *Availability of Lands*

SC-5.01.C Add the following new paragraph immediately after Paragraph 5.01.C:

- D. Permanent improvements on private property are limited to those areas having an executed easement or servitude agreement prior to installation. Contractor is to comply with all terms, restrictions, special conditions, etc., as described in the easements or servitudes. Costs of such compliance are to be reflected in related work. No separate compensation will be made for this compliance.

SC-5.03 *Subsurface and Physical Conditions*

SC-5.03.D Add the following new paragraphs immediately after Paragraph 5.03.D:

E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
N/A	N/A	N/A

F. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
N/A	N/A	N/A

G. Contractor may examine copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents at the Engineer's Office during regular business hours, or may request copies from Engineer.

SC-5.04 *Differing Subsurface or Physical Conditions*

SC-5.4.E Delete Paragraph 5.04.E.1.b in its entirety and insert the following in its place:

b. With respect to Work that is paid for on a unit price basis, the provisions of L.R.S. 38:2212 M(5) shall prevail.

SC-5.06 *Hazardous Environmental Conditions at Site*

SC-5.06.A Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
N/A	N/A	N/A

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
N/A	N/A	N/A

SC-6.01 *Performance, Payment and Other Bonds*

SC-6.01.A Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2018 Edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2018 Edition).

SC-6.02 *Insurance – General Provisions*

SC-6.02.B Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03 *Contractor's Insurance*

SC-6.03.B. Add the following new paragraph immediately after Paragraph 6.03.B.5:

6. Remain in effect for one (1) year after final payment.

SC-6.03.C. Add the following new paragraph immediately after Paragraph 6.03.C:

D. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation:

- | | |
|--|--------------------|
| a. State: | Statutory |
| b. Applicable Federal
(e.g., Longshoreman's): | Statutory |
| c. Employer's Liability: | <u>\$1,000,000</u> |

2. Contractor's General Liability which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

- | | |
|---|--------------------|
| a. General Aggregate | <u>\$2,000,000</u> |
| b. Products – Completed
Operations Aggregate | <u>\$1,000,000</u> |
| c. Personal and Advertising
Injury | <u>\$1,000,000</u> |
| d. Each Occurrence
(Bodily Injury and
Property Damage) | <u>\$1,000,000</u> |
| e. Property Damage liability insurance will provide
Explosion, Collapse, and Under-ground coverages
where applicable. | |
| f. Excess or Umbrella Liability | |
| General Aggregate | <u>\$2,000,000</u> |
| Each Occurrence | <u>\$2,000,000</u> |

3. Automobile Liability:

- | | |
|-----------------------------|--------------------|
| a. Combined Single Limit of | <u>\$1,000,000</u> |
|-----------------------------|--------------------|

4. The Contractual Liability shall provide coverage for not less than the following amounts:

a. Bodily Injury:	
Each person	<u>\$1,000,000</u>
Each Accident	<u>\$1,000,000</u>
b. Property Damage:	
Each Accident	<u>\$1,000,000</u>
Annual Aggregate	<u>\$2,000,000</u>

5. The Contractor shall provide the Owner with an Owner's Protective Liability Insurance Policy naming the Owner and the Engineer as additional insureds, and each of their officers, agents and employees as additional insureds under that policy, said policy to protect said parties from claims which may arise from operations under the contract. Limits of policy coverage shall be bodily injury liability \$1,000,000 each person/\$2,000,000 aggregate; property damage - \$1,000,000 per person/\$2,000,000 aggregate. Any and all additional premium charges for securing this insurance shall be included as part of the Contractor's bid and contract price.

6. The Contractor, shall cause the Owner and the Engineer to be named as an additional insureds under the Contractor's liability policy and any and all additional premium charges for securing an endorsement to the Contractor's liability policy naming the Owner and the Engineer as an additional insureds shall also be included as part of the Contractor's bid and contract price.

SC-6.03.C Add the following new paragraph immediately after Paragraph 6.03.D:

E. Exhibit A: Certificate of Insurance - Insured/Contractor (Exhibit A1); and Certificate of Insurance - Insured/Owner (Exhibit A2); Exhibit A1 and Exhibit A2 are samples showing sample insurance coverages. Actual coverage required shall be as stated in the General & Supplemental Conditions.

SC-6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Delete Paragraph 6.04 in its entirety.

SC-6.05 *Property Losses; Subrogation*

SC-6.05 Delete Paragraph 6.05 in its entirety.

SC-6.06 *Receipt and Application of Property Insurance Proceeds*

SC-6.06 Delete Paragraph 6.06 in its entirety.

SC-7.04 *Services, Materials, and Equipment*

SC-7.04.C Add the following new paragraph immediately after paragraph 7.04.C:

D. Suppliers of all major materials or equipment furnished shall supply manufacturer's printed warranties on all materials or equipment furnished. The Contractor shall furnish these warranties with the Shop Drawings submittal. The warranties shall warrant the materials or equipment for a period of one (1) year from the filing of the Substantial Completion certificate.

SC-7.09 *Permits*

SC-7.09.A Add the following new language to the end of the last sentence of Paragraph 7.09.A:

A. ;unless otherwise stated in the Contract Documents.

SC-7.10 *Taxes*

SC-7.10.A Delete paragraph 7.10.A in its entirety and insert the following:

A. Contractor shall include all city, state and federal taxes and sales taxes in his bid except when exempted as an Agent of Governmental Entity by Louisiana Department of Revenue Form LDR R-1020. Tax exempt status will be granted to the Contractor, providing the Contractor processes the necessary LDR form(s).

SC-7.17 *Contractor's General Warranty and Guarantee*

SC-7.17.E Add the following new paragraph immediately after paragraph 7.17.E:

F. In accordance with L.R.S. 9:2774, the commencement date for ALL warranties or guarantees of every nature or kind

shall be the date of Substantial Completion. It shall be the Contractor's sole responsibility to ensure that all written warranties include this commencement time. Also, in accordance with L.R.S. 9:2274, the provision of this Section shall not be subject to waiver by contract.

SC-7.18 *Indemnification*

SC-7.18 Delete Paragraphs 7.18.A and 7.18.B in their entirety and insert the following:

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer and their consultants, agents and employees from and against all claims, damages, losses and expense, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense is caused in whole or in part by any negligent act or omission, or breach of this contract, by Contractor, or any Subcontractors of Contractor or, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable. Any and all insurance premium cost that insures this obligation to indemnify shall be included as part of the Contractor's bid and contract price.
- B. In any and all claims against Owner or Engineer or any of their consultants, agents or employees by any person, agent or employee of Contractor, and Subcontractor, or any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 7.18.A. shall not be limited in any way by any limitation on the legal remedies or the amount or type of damages, compensation or benefits payable by or for Contractor or any such Subcontractor or other person or organization under worker's or workmen's compensation acts, disability benefit act or other employee benefit acts.

SC-10.03 *Resident Project Representative*

SC-10.03.B Add the following new paragraph immediately after paragraph 10.03.B:

- C. The Duties, Responsibilities, and Limitations of Authority of Project Representative shall be as noted in an Exhibit to this document.

SC-11.02 *Change Orders*

SC-11.02.B Add the following new paragraphs immediately after Paragraph 11.02.B:

- A. Before a Change Order is prepared, the Contractor shall provide and deliver to the Engineer the following information concerning the Cost of Work, not subject to waiver in accordance with L.R.S. 38:2212M.(5), within a reasonable time after being notified to prepare said Change Order.
1. A detailed itemized list of labor, material and equipment costs for the General Contractor's Work including quantities and unit costs for each item of labor, material and equipment.
 2. An itemized list of labor, material and equipment costs for each Subcontractor's and/or Sub-Subcontractor's Work including quantities and unit costs for each item of labor, material and equipment.
- B. After a Change Order has been approved, no future requests for extensions of time or additional cost shall be considered for that Change Order.

SC-13.01 *Cost of the Work*

SC-13.01.B. Delete Paragraphs 13.01.B.5.c.1 and 13.01.B.5.c.2 in their entirety and insert the following in their place:

c. *Construction Equipment Rental:*

- 1) Rentals of all construction equipment and machinery, and the parts thereof in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the

Equipment Rental Rate Book as defined in the Louisiana Public Bid Law, or if not available, the latest edition of "Blue Book" rates, or special equipment rates agreed to by the Owner and Engineer. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than \$1,000 will be considered small tools.

SC-13.03 *Unit Price Work*

SC-13.03.E Delete Paragraphs 13.03.E.1 and 13.03.E.2 in their entirety and insert the following in their place:

1. In regards to established unit prices as originally bid the provisions of R.S. 38:2212M.(5) shall apply.

SC-15.01 *Progress Payments*

SC-15.01.B Add the following new paragraphs immediately after Paragraph 15.01.B.4:

5. Normal retainage shall not be due the Contractor until after substantial completion and expiration of the forty-five day lien period and submission to the Engineer of a clear lien certificate, consent of surety, and invoice for retainage. Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Payments for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, including applicable insurance.

SC-15.01.D Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

1. Forty-five (45) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount will (subject to the provisions of Paragraph 15.01.E)

become due, and when due will be paid by Owner to Contractor; except for projects funded fully or in part by a Federal reimbursement program. For such projects the Owner will make payment in a timely manner consistent with reimbursement.

SC-15.03 *Substantial Completion*

SC-15.03.A Delete Paragraph 15.03.A in its entirety and insert the following in its place:

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer schedule a site visit to review the status of work. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

SC-15.03.C Delete Paragraph 15.03.C in its entirety and insert the following in its place:

C. If Engineer considers the work as substantially complete, Engineer will deliver to Owner a report recommending consideration of acceptance of the Contract as substantially complete. There shall be attached to the report a punch list of items to be completed or corrected before final payment. Owner shall timely consider the Engineer's recommendation of acceptance and either officially accept or reject the recommendation. If the recommendation is rejected by the Owner, the Owner shall notify the Contractor in writing, stating reasons therefore. If the recommendation is accepted by the Owner, either an adopted governing body resolution; or a Notice of Acceptance document dated and signed by the Owner shall establish the date of Substantial Completion. The Owner will record the resolution or the Notice of Acceptance document with the Clerk of Court in the Parish in which the work has been performed. Any punch list generated during the project will include the cost estimates for the particular items of work the Engineer has developed based on the mobilization, labor, material, and equipment costs of correcting each punch list item. The values established for punch list items shall be withheld in addition to the withheld retainage amount.

SC-15.03.D Delete Paragraph 15.03.D in its entirety and insert the following in its place:

D. Warranties required by the Contract Documents shall commence on the date of Acceptance of the Work unless otherwise agreed to in writing by the Owner and Contractor. Unless otherwise agreed to in writing by the Owner and Contractor, security, maintenances, heat, utilities, damage to the Work not covered by the punch list and insurance shall become the Owner's responsibility on the Date of Substantial Completion.

SC-15.03.E Delete Paragraph 15.03.E in its entirety and insert the following in its place:

C. If all punch list items have not been completed by the end of the forty-five (45) day lien period, through no fault of the Engineer or Owner, the Owner may hold the Contractor in default. If the Owner finds the Contractor is in default, the Surety shall be notified. If within forty-five (45) days after notification, the Surety has not completed the punch list, through no fault of the Engineer or Owner, the Owner may, at his option, contract to have the balance of the Work completed and pay for such Work with the unpaid funds remaining in the Contract sum.

SC-15.03.F Delete Paragraph 15.03.F in its entirety and insert the following in its place:

D. At the end of the 45 day lien period, payment shall be approved for all punch list items completed up to that time and for the contract retainage. After that payment, none of the remaining funds shall be due the Contractor until all punch list items are completed and are accepted by the Engineer. If funds remaining are less than that required to complete the Work, the Contractor shall pay the difference.

SC-15.06 *Final Payment*

SC-15.06.A Delete Paragraph 15.06.A.2.e in its entirety and insert the following in its place:

e. A certified clear lien certificate on the Contract obtained from the Clerk of Court after 45 days from the recordation date of the certificate of substantial completion.

SC-15.06.A Delete Paragraph 15.06.A.3 in its entirety.

SC-15.06.E Delete Paragraph 15.06.E in its entirety and insert the following in its place:

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 45 days of Owner's receipt of the final Application for Payment from Engineer.

SC-16.01 *Owner May Suspend Work*

SC-16.01.A Delete Paragraph 16.01.A. in its entirety and insert the following in its place:

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 60 consecutive days by written notice to Contractor and 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 an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work. If Work is suspended by Owner for more than 60 consecutive days, Contractor shall be entitled to an adjustment in Contract Price and/or and adjustment of Contract Time directly attributable to any such suspension.

SC-16.04 *Contractor May Stop Work or Terminate*

SC-16.04 Delete Paragraph 16.04.A. and 16.04.B in its entirety and insert the following in its place:

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 45 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 45 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

SC-18.07 *Controlling Law*

SC-18.07 Delete Paragraph 18.07.A in its entirety and insert the following in its place:

A. This Contract is to be governed by the nearest District Court to the location of the Project; and overriding distance, the District Court within the Parish where the Project is located, if such District Court exists.

SC-18.11 *Precedence Between Federal Compliance Provisions and Other Provisions*

SC-18.11 Add the following new paragraph immediately after Paragraph 18.10:

A. Where discrepancies between federal compliance provisions, if any, and other Contract Documents exist, the federal compliance provisions shall take precedence.

SC-18.12 *Ownership and Use of Drawings, Specifications and Other Instruments of Service*

SC-18.12 Add the following new paragraph immediately after Paragraph 18.11:

A. All Drawings, Specifications and all other documents and things (in electronic and/or tangible form) prepared by the Engineer (or Engineer's consultants) are deemed work made for hire and shall be the property of the Owner, including all copyrights thereto as provided in R.S. 38:2317.

SC-18.13 *Recovery of Attorney's Fees*

SC-18.13 Add the following new paragraph immediately after Paragraph 18.12:

- A. In the event that it is necessary to enforce this contract in any judicial forum, the parties agree that whoever substantially prevails in the litigation shall be entitled to its reasonable attorney's fees as fixed by the court.

SC-18.14 *Contractor and Subcontractor Employees*

SC-18.14 Add the following new paragraph immediately after Paragraph 18.13:

Contractor and its employees, officers, agents, representatives, and Subcontractors shall conduct themselves in an appropriate and professional manner, in accordance with the Owner's requirements, at all times while working on the Project. Any such individual who behaves in an inappropriate manner or who engages in the use of inappropriate language or conduct while on Owner's property, as determined by the Owner, shall be removed from the Project at the Owner's request. Such individual shall not be permitted to return without the written permission of the Owner. The Owner shall not be responsible or liable to Contractor or any Subcontractor for any additional costs, expenses, losses, claims or damages incurred by Contractor or its Subcontractor as a result of the removal of an individual from the Owner's property pursuant to this paragraph. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

SC-18.15 *Human Remains, Archeological Sites, Etc.*

SC-18.15 Add the following new paragraph immediately after Paragraph 18.14:

- A. If, during the course of the Work, the Contractor discovers human remains, unmarked burial or archaeological site, burial artifacts, or wetlands, which are not indicated in the Contract Documents, the Contractor shall follow all procedures mandated by State and Federal law, including but not limited to R.S. 8:671 et seq., R.S. 49:213.1 et seq., and Sections 401 & 404 of the Federal Clean Water Act. Request for adjustment of the Contract Sum and Contract Time arising from the existence of such remains or features shall be submitted in writing to the Owner pursuant to the Contract Documents.

SC-18.16 *Subcontractor Responsibility*

SC-18.16 Add the following new paragraph immediately after Paragraph 18.15:

- A. The Contractor shall be solely responsible for selection and performance of all subcontractors. The Contractor shall not be entitled to claims for additional time and/or an increase in the contract sum due to a problem with performance or non-performances of a subcontractor.

CITY OF PINEVILLE, LOUISIANA
RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

SUPPLEMENTARY CONDITIONS

EXHIBIT A

EXHIBIT A1 - SAMPLE "CERTIFICATE OF INSURANCE -
INSURED/CONTRACTOR"

EXHIBIT A2 - SAMPLE "CERTIFICATE OF INSURANCE -
INSURED/OWNER"

EXHIBIT B

EXHIBIT B - "DUTIES AND RESPONSIBILITIES
OF PROJECT REPRESENTATIVES"

EXHIBIT A1 - CERTIFICATE OF INSURANCE - INSURED/CONTRACTOR

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY)

PRODUCER
ABC Agency
 123 Street
 Anywhere USA

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A	XYZ Insurance Co
COMPANY B	
COMPANY C	
COMPANY D	

INSURED

John Doe Construction Co.
 1 Construction Lane
 Builder City USA

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
	GENERAL LIABILITY				
<input checked="" type="checkbox"/>	COMMERCIAL GENERAL LIABILITY	1111111	01/01/07	01/01/08	GENERAL AGGREGATE \$ 2,000,000
	<input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR				PRODUCTS-COMP/OP AGG. \$ 1,000,000
	OWNER'S & CONTRACTOR'S PROT.				PERSONAL & ADV INJURY \$ 1,000,000
<input checked="" type="checkbox"/>	Additional Insured: Pan American Engineers, City of Tomorrow				EACH OCCURRENCE \$ 1,000,000
<input checked="" type="checkbox"/>	Waiver of Rights of Recovery: Pan American Engineers, City of Tomorrow				FIRE DAMAGE (Any One Fire) \$ 50,000
					MED. EXP (Any One Person) \$ 5,000
	AUTOMOBILE LIABILITY				
<input checked="" type="checkbox"/>	ANY AUTO	2222222	01/01/07	01/01/08	COMBINED SINGLE LIMIT \$ 1,000,000
	ALL OWNED AUTOS				BODILY INJURY (Per person) \$
	SCHEDULED AUTOS				BODILY INJURY (Per accident) \$
	HIRED AUTOS				PROPERTY DAMAGE \$
	NON-OWNED AUTOS				
<input checked="" type="checkbox"/>	Additional Insured: Pan American Engineers, City of Tomorrow				
<input checked="" type="checkbox"/>	Waiver of Rights of Recovery: Pan American Engineers, City of Tomorrow				
	GARAGE LIABILITY				
	ANY AUTO				AUTO ONLY - EA ACCIDENT \$
					OTHER THAN AUTO ONLY:
					EACH ACCIDENT \$
					AGGREGATE \$
	EXCESS LIABILITY				
	UMBRELLA FORM				EACH OCCURRENCE \$
	OTHER THAN UMBRELLA FORM				AGGREGATE \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				
	THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE: <input checked="" type="checkbox"/> INCL <input type="checkbox"/> EXCL	3333333	01/01/07	01/01/08	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER \$ 1,000,000
					EACH ACCIDENT \$ 1,000,000
					DISEASE-POLICY LIMIT \$ 1,000,000
					DISEASE-EACH EMPLOYEE \$ 1,000,000
	OTHER:				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

CERTIFICATE HOLDER

CANCELLATION

Pan American Engineers, LLC
 P.O. Box 89
 Alexandria, LA 71309

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ABC Agency



ACORD 25-S (1/95)

Certificate #

EXHIBIT A2 - CERTIFICATE OF INSURANCE - INSURED/OWNER

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY)

PRODUCER
ABC Agency
 123 Street
 Anywhere USA

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A **XYZ Insurance Co**

INSURED
City of Tomorrow

COMPANY B
 COMPANY C
 COMPANY D

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
	GENERAL LIABILITY				
<input checked="" type="checkbox"/>	COMMERCIAL GENERAL LIABILITY	4444444	Job Start Date		GENERAL AGGREGATE \$1,000,000
<input type="checkbox"/>	CLAIMS MADE <input checked="" type="checkbox"/> OCCUR				PRODUCTS-COMP/OP AGG. \$1,000,000
<input checked="" type="checkbox"/>	OWNER'S & CONTRACTOR'S PROT.				PERSONAL & ADV INJURY \$1,000,000
<input checked="" type="checkbox"/>	Additional Insured: Pan American Engineers				EACH OCCURRENCE \$1,000,000
<input checked="" type="checkbox"/>	Waiver of Rights of Recovery: Pan American Engineers, City of Tomorrow				FIRE DAMAGE (Any One Fire) \$
					MED. EXP (Any One Person) \$
	AUTOMOBILE LIABILITY				
<input type="checkbox"/>	ANY AUTO				COMBINED SINGLE LIMIT \$
<input type="checkbox"/>	ALL OWNED AUTOS				BODILY INJURY (Per person) \$
<input type="checkbox"/>	SCHEDULED AUTOS				BODILY INJURY (Per accident) \$
<input type="checkbox"/>	HIRED AUTOS				PROPERTY DAMAGE \$
<input type="checkbox"/>	NON-OWNED AUTOS				
	GARAGE LIABILITY				
<input type="checkbox"/>	ANY AUTO				AUTO ONLY - EA ACCIDENT \$
					OTHER THAN AUTO ONLY:
					EACH ACCIDENT \$
					AGGREGATE \$
	EXCESS LIABILITY				
<input type="checkbox"/>	UMBRELLA FORM				EACH OCCURRENCE \$
<input type="checkbox"/>	OTHER THAN UMBRELLA FORM				AGGREGATE \$
					\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				
	THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE: <input type="checkbox"/> INCL <input type="checkbox"/> EXCL				WC STATUTORY LIMITS <input type="checkbox"/> OTH ER
					EACH ACCIDENT \$
					DISEASE-POLICY LIMIT \$
					DISEASE-EACH EMPLOYEE \$
	OTHER:				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

Reference: Project Description

CERTIFICATE HOLDER

Pan American Engineers, LLC
 P.O. Box 89
 Alexandria, LA 71309

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, IT'S AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ABC Agency

ACORD 25-S (1/95)

Certificate #

EXHIBIT B

Duties, Responsibilities and Limitations of Authority of Project Representative

ENGINEER shall furnish a Project Representative ("PR"), assistants and other field staff to assist ENGINEER in observing progress and quality of the work of CONTRACTOR.

Through more extensive on-site observations of the Work in progress and field checks of materials and equipment by the PR and assistants, ENGINEER shall endeavor to provide further protection for OWNER against defects and deficiencies in the work of CONTRACTOR. However, ENGINEER shall not, during such visits or as a result of such observations of CONTRACTOR's work in progress, supervise, direct, or have control over CONTRACTOR's work nor shall ENGINEER have authority over or responsibility for the means, methods, techniques, sequences or procedures selected by CONTRACTOR, for safety precautions and programs incident to the work of CONTRACTOR, for any failure of CONTRACTOR to comply with laws, rules, regulations, ordinances, codes or orders applicable to CONTRACTOR's performing and furnishing the work, or responsibility of construction for CONTRACTOR's failure to furnish and perform the Work in accordance with the Contract Documents.

The duties and responsibilities of the PR are limited to those of ENGINEER in ENGINEER's agreement with the OWNER and in the construction Contract Documents, and are further limited and described as follows:

A. General

PR is ENGINEER's agent at the Site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding PR's actions. PR's dealings in matters pertaining to the on-site Work shall in general be with ENGINEER and CONTRACTOR, keeping OWNER advised as necessary. PR's dealings with Subcontractors shall only be through or with the full knowledge and approval of CONTRACTOR. PR shall generally communicate with OWNER with the knowledge of and under the direction of ENGINEER.

B. Duties and Responsibilities of PR

1. *Schedules:* Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by CONTRACTOR and consult with ENGINEER concerning acceptability.
2. *Conferences and Meetings:* Attend meetings with CONTRACTOR, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
3. *Liaison:*
 - a. Serve as ENGINEER's liaison with CONTRACTOR, working principally through CONTRACTOR's superintendent and assist in understanding the intent of Contract Documents; and assist ENGINEER in serving as OWNER's liaison with CONTRACTOR when CONTRACTOR's operations affect OWNER's on-site operations.
 - b. Assist in obtaining from OWNER additional details or information, when required for proper execution of the Work.

4. *Shop Drawings and Samples:*
 - a. Record date of receipt of Shop Drawings and Samples.
 - b. Receive Samples, which are furnished at the Site by CONTRACTOR, and notify ENGINEER of availability of Samples for examination.
 - c. Advise ENGINEER and CONTRACTOR of the commencement of any Work requiring a Shop Drawing or Sample if the submittal has not been approved by ENGINEER.
5. *Review of Work, Rejection of Defective Work, Inspections and Tests:*
 - a. Conduct on-site observations of the Work in progress to assist ENGINEER in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to ENGINEER whenever PR believes that any Work will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise ENGINEER of Work that PR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment and systems start-ups and operating and maintenance training are conducted in the presence of appropriate personnel, and that CONTRACTOR maintains adequate records thereof; and observe, record and report to ENGINEER appropriate details relative to the test procedures and start-ups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to ENGINEER.
6. *Interpretation of Contract Documents:* Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed and transmit to CONTRACTOR clarifications and interpretations as issued by ENGINEER.
7. *Modifications:* Consider and evaluate CONTRACTOR's suggestions for modifications in Drawings or Specifications and report with PR's recommendations to ENGINEER. Transmit to CONTRACTOR in writing decisions as issued by ENGINEER.
8. *Records:*
 - a. Maintain at the job Site orderly files for correspondence, reports of job conferences, Shop Drawings and Samples, reproductions of original Contract Documents including all Work Change Directives, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing submittals received from and delivered to CONTRACTOR and other Project related documents.
 - b. Prepare a daily report or keep a diary or log book, recording CONTRACTOR's hours on the job site, weather conditions, data relative to questions of Work Change Directives, Change Orders or changed conditions, list of job Site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to ENGINEER.

c. Record names, addresses and telephone numbers of all contractors, subcontractors and major suppliers of materials and equipment.

9. *Reports:*

a. Furnish to ENGINEER periodic reports as required of progress of the Work and of CONTRACTOR's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.

b. Consult with ENGINEER in advance of scheduled major tests, inspections or start of important phases of the Work.

c. Draft proposed Change Orders and Work Change Directives, obtaining backup material from CONTRACTOR and recommend to ENGINEER Change Orders, Work Change Directives, and Field Orders.

d. Report immediately to ENGINEER and OWNER the occurrence of any accident.

10. *Payment Requests:* Review Applications for Payment with CONTRACTOR for compliance with the established procedure for their submission and forward with recommendations to ENGINEER, noting particularly the relationship of the payment requested to the schedule of values, Work completed and materials and equipment delivered at the Site but not incorporated in the Work.

11. *Certificates, Maintenance and Operation Manuals:* During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by CONTRACTOR are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to ENGINEER for review and forwarding to OWNER prior to final payment for the Work.

12. *Completion:*

a. Before ENGINEER issues a Certificate of Substantial Completion, submit to CONTRACTOR a list of observed items requiring completion or correction.

b. Observe whether CONTRACTOR has had performed inspections required by laws, rules, regulations, ordinances, codes, or orders applicable to the Work, including but not limited to those to be performed by public agencies having jurisdiction over the Work.

c. Conduct a final inspection in the company of ENGINEER, OWNER and CONTRACTOR and prepare a final list of items to be completed or corrected.

d. Observe whether all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance and issuance of the Notice of Acceptability of the Work.

C. Limitations on Authority of PR

Project Representative:

1. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items), unless authorized by ENGINEER.

2. Shall not exceed limitations of ENGINEER's authority as set forth in the Agreement or the Contract Documents.

3. Shall not undertake any of the responsibilities of CONTRACTOR, Subcontractor, Suppliers, or CONTRACTOR's superintendent.

4. Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.

5. Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work.

6. Shall not accept Shop Drawing or Sample submittals from anyone other than CONTRACTOR.

7. Shall not authorize OWNER to occupy the Project in whole or in part.

8. Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by ENGINEER.

(THIS FORM RESOLUTION, OR OTHER SIMILAR WRITTEN EVIDENCE OF AUTHORITY, IS REQUIRED TO BE SUBMITTED WITH BID (SEE INSTRUCTIONS TO BIDDERS – ARTICLE 12.2)

SECTION 00900

CORPORATE RESOLUTION

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF _____, INCORPORATED.

AT THE MEETING OF DIRECTORS OF _____, INCORPORATED, DULY NOTICED AND HELD ON _____, _____, A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT WAS:

RESOLVED THAT _____, BE AND IS HEREBY APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS AND TRANSACTIONS WITH THE CITY OF PINEVILLE, THE GOVERNING AUTHORITY OF THE CITY OF PINEVILLE OR ANY OF ITS AGENCIES, DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT LIMITED TO THE EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS, BONDS, SURETIES, CONTRACTS AND ACTS AND TO RECEIVE AND RECEIPT THEREFOR ALL PURCHASE ORDERS AND NOTICES ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID OR CONTRACT, THIS CORPORATION HEREBY RATIFYING, APPROVING, CONFIRMING AND ACCEPTING EACH AND EVERY SUCH ACT PERFORMED BY SAID AGENT AND ATTORNEY-IN-FACT.

I HEREBY CERTIFY THE FOREGOING TO BE A TRUE AND CORRECT COPY OF AN EXCERPT OF THE MINUTES OF THE ABOVE DATED MEETING OF THE BOARD OF DIRECTORS OF SAID CORPORATION, AND THE SAME HAS NOT BE REVOKED OR RESCINDED.

SECRETARY-TREASURER

DATE

(NOT REQUIRED TO BE SUBMITTED WITH BID)
SUBMIT BY THE LOW BIDDER WITHIN 10 DAYS AFTER BID OPENING

SECTION 00910

ATTESTATIONS/AFFIDAVITS

CITY OF PINEVILLE, LOUISIANA
RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION
NAME OF PROJECT

Before me, the undersigned notary public, duly commissioned and qualified in and for the parish and state aforesaid, personally came and appeared Affiant, who after being duly sworn, attested as follows:

L.R.S. 38:2227 PAST CRIMINAL CONVICTIONS OF BIDDERS

A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

- | | |
|---|--------------------------------------|
| (a) Public bribery (L.R.S. 14:118) | (c) Extortion (L.R.S. 14:66) |
| (b) Corrupt influencing (L.R.S. 14:120) | (d) Money laundering (L.R.S. 14:230) |

B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:

- | | |
|--|--|
| (a) Theft (L.R.S. 14:67) | (f) Bank fraud (L.R.S. 14:71.1) |
| (b) Identity Theft (L.R.S. 14:67.16) | (g) Forgery (L.R.S. 14:72) |
| (c) Theft of a business record
(L.R.S.14:67.20) | (h) Contractors; misapplication of
payments (L.R.S. 14:202) |
| (d) False accounting (L.R.S. 14:70) | (i) Malfeasance in office (L.R.S. 14:134) |
| (e) Issuing worthless checks
(L.R.S. 14:71) | |

L.R.S. 38:2212.10 VERIFICATION OF EMPLOYEES

A. Appearer is registered and participates in a status verification system to verify that all employees in the state of Louisiana are legal citizens of the United States or are legal aliens.

B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.

C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

(NOT REQUIRED TO BE SUBMITTED WITH BID)
SUBMIT BY THE LOW BIDDER WITHIN 10 DAYS AFTER BID OPENING

L.R.S. 23:1726(B) CERTIFICATION REGARDING UNPAID WORKERS COMPENSATION INSURANCE

A. L.R.S. 23:1726 prohibits any entity against whom an assessment under Part X of Chapter 11 of Title 23 of the Louisiana Revised Statutes of 1950 (Alternative Collection Procedures & Assessments) is in effect, and whose right to appeal that assessment is exhausted, from submitting a bid or proposal for or obtaining any contract pursuant to Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950 and Chapters 16 and 17 of Title 39 of the Louisiana Revised Statutes of 1950.

B. By signing this bid /proposal, Affiant certifies that no such assessment is in effect against the bidding/proposing entity.

LA R.S. 38:2216.1 PROHIBITION OF CONTRACTS WITH COMPANIES THAT DISCRIMINATE AGAINST FIREARM AND AMMUNITION INDUSTRIES

A. R.S. 38:2216.1 prohibits public entities from entering into or renewing contracts valued at \$100,000 or more, funded primarily with public money, with for-profit companies of fifty or more employees that discriminate against firearm entities or firearm trade associations.

B. By signing this bid/proposal, Affiant certifies:

(1) Affiant does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association based solely on the entity's or association's status as a firearm entity or firearm trade association.

(2) Affiant will not discriminate against a firearm entity or firearm trade association during the term of the contract based solely on the entity's or association's status as a firearm entity or firearm trade association.

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

SIGNATURE OF AUTHORIZED
SIGNATORY OF BIDDER

WITNESSES:

Sworn to and subscribed before me this _____ day of _____, 202__

Notary Public

(NOT REQUIRED TO BE SUBMITTED WITH BID)
SUBMIT BY THE LOW BIDDER WITHIN 10 DAYS AFTER BID OPENING

LA R.S. 38:2224 CONTRACTOR NON-COLLUSION AFFIDAVIT

STATE OF LOUISIANA

PARISH OF _____

BE IT KNOWN, that on this _____ day of _____, 20____, before me the undersigned Notary Public, duly commissioned and qualified, within and for the Parish of _____, State of Louisiana, personally came and appeared _____, as the duly authorized agent of _____, who after being by me first duly sworn, did depose and say:

That _____ has/have been selected as Contractor for the **PROJECT NAME: CHILDREN’S ADVOCACY NETWORK INTERIOR RENOVATIONS AT 901 16TH STREET** and that affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course or their duties for affiant; and

That no part of the contract price received by affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for affiant.

APPEARER FURTHER DECLARES, that they will, in all respects, comply with the public contract laws of the State of Louisiana, including Title 38 of the Louisiana Statutes, and particularly Section 2224, as amended, of such Title 38 of the Louisiana Revised Statutes.

WITNESSES:

BY: _____

Sworn to and subscribed before me this _____ day of _____, 20__.

Notary Public

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 1 – GENERAL PROVISIONS

- Section 01010 - SUMMARY OF WORK
- Section 01011 - DRAWINGS
- Section 01015 - GENERAL CONDUCT OF WORK
- Section 01016 - PROTECTION OF EXISTING UTILITIES
- Section 01090 - ABBREVIATIONS
- Section 01300 - CONSTRUCTION PROGRESS AND SCHEDULES
- Section 01330 - SURVEY DATA
- Section 01340 - SHOP DRAWINGS, SAMPLES AND PRODUCT DATA
- Section 01410 - TESTING LABORATORY SERVICES
- Section 01500 - TEMPORARY FACILITIES
- Section 01560 - MAINTENANCE OF WORK SITE
- Section 01700 - CONTRACT CLOSEOUT
- Section 01710 - CLEANING
- Section 01720 - RECORD DRAWINGS
- Section 01730 - OPERATION AND MAINTENANCE DATA
- Section 01740 - WARRANTIES AND BONDS
- Section 01750 - TRENCH SAFETY

SECTION 01010SUMMARY OF WORKPART 1 - GENERAL

1.1 Scope: This section describes the location of the project site and the work to be performed.

1.2 Description of Site: The project work area is the existing main sewer pumping station (Pump Station No. 1) located within the existing wastewater treatment plant site for the City of Pineville, Louisiana.

1.3 Work to be Performed: The project consists of reconstruction of the Wastewater Treatment Plant Sewer Pump Station (Sewer Pump Station No. 1) including triplex pumping system, piping and valving, site piping and valving and 16" sewer force main, flow meters, pump station building renovation and addition, site paving and access drive, exhaust/ventilation system, gas detection system, fencing, and complete electrical and control system, and all related appurtenances.

1.4 Health Authority Requirements: The CONTRACTOR will familiarize himself with the requirements of the local health authority. The CONTRACTOR will be particularly careful that the water piping is not to be placed parallel to sewer lines closer than six (6) feet from one pipeline to the other or when crossing over or under, no closer than 1'-6" clearance.

1.5 Drawings and Specifications:

A. Specifications: The Technical Specifications consist of three parts: General, Products, and Execution. The General section contains general requirements which govern the work. The Products and Execution sections modify and supplement these by detailed requirements of the work and shall always govern whenever there appears to be a conflict.

B. Intent:

1. All work called for in the Specifications applicable to the Contract but not shown on the Drawings in their present form or vice versa shall be of like effect as if shown or mentioned in both. Work not specified in either the Drawings or in the Specifications but involved in carrying out their intent or in the complete and proper execution of the work is required and shall be performed by the CONTRACTOR as though it were specifically delineated or described.

2. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specification shall be made upon that basis.

C. Conflict Between Drawings and Specifications: Where an obvious conflict exists between the Drawings and Specifications, the ENGINEER shall decide which governs and the CONTRACTOR shall comply with the decision. Such decision shall not be grounds for additional payment to the CONTRACTOR, i.e. the CONTRACTOR shall include the price of the most expensive alternative in his Bid.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 General: Perform all work within the limits indicated on the Drawings and described herein, all to the ENGINEER'S and OWNER'S satisfaction.

- END OF SECTION -

SECTION 01011
DRAWINGS

PART 1 - GENERAL

- 1.1 Scope: This section describes each sheet of the Drawings prepared for this project.
- 1.2 Drawings: The title sheet for the Drawings referred to in the Contract Documents bear the title:

DRAWINGS FOR
RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

CITY OF PINEVILLE, LOUISIANA

and are numbered and designated as follows:

<u>Sheet No.</u>	<u>Description</u>
1	Title Sheet
2	Sheet Index and Vicinity Map
3	General Notes
4	Limited Topographic Survey
5	WWTP Piping Records
6	WWTP Flow Diagrams
7	By-Pass Plan
8	Demolition - Site Plan
9	Demolition - Site Section
10	Demolition - Elevations
11	Demolition - Floor Plans
12	Demolition - Sections
13	Overall Site Plan
14	Enlarged Site Plan
15	Grading Plan
16	16 in. S.F.M. Diversion
17	Dry Pit Pump Plan
18	Dry Pit Pump Elevation
19	Wet Pit, Dry Pit, Sump Piping
20	Pump Hoist Elevation
21	Meter and Vault Details
22	Paving and Surface Details
23	Miscellaneous Details 1
24	Miscellaneous Details 2
25	Generator Pan Details
26	Hatch Details
27	Chain Link Fence Details
28	Concrete Structure Details
29	Building Floor Plan
30	Building Elevations
31	Building Details

32.....	Ventilation Floor Plan
33.....	Ventilation Sections
34.....	Ventilation Details
35.....	Electrical Site Plan
36.....	Electrical Floor Plans
37.....	Electrical Details
38.....	Archive Civil 1
39.....	Archive Civil 2
40.....	Archive Civil 3
41.....	Archive Architectural
42.....	Archive Structural
43.....	Archive Mechanical
44.....	Archive Electrical

P.A.E. Job No. 13191, Drawing No. 14797, dated February 2026.

1.3 Drawings and Specifications Issued to Successful Bidder: The successful Bidder for this contract will be furnished four (4) complete sets of Drawings and Specifications at no cost. If, during the prosecution of work the CONTRACTOR should deem it necessary to have additional sets of Drawings and Specifications they may be purchased from the ENGINEER at the cost of reproduction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

3.1 The WORK shall conform to the Drawings and Specifications prepared by the ENGINEER. The WORK shall conform to such other Drawings relating to the project as may be exhibited by the OWNER and the ENGINEER prior to the opening of proposal and which are included with the above Drawings and Specifications for the CONTRACTOR'S use in making his bid. The WORK shall also conform to such Drawings and Specifications as may be furnished from time to time during construction, including changes of detail as the ENGINEER may consider necessary because of conditions that are found to exist during construction.

- END OF SECTION -

SECTION 01015GENERAL CONDUCT OF WORKPART 1 - GENERAL

- 1.1 Scope: This Section generally describes the manner in which work shall be conducted.
- 1.2 Coordination of Work: The CONTRACTOR shall be responsible for the coordination of all work so that the project can be completed within the time stipulated in the Contract.

PART 2 - PRODUCTS (NOT USED)PART 3 - EXECUTION

- 3.1 Handling and Storage:
- A. The CONTRACTOR shall, at his own expense, handle, haul, and distribute all materials and all surplus materials for the different portions of the work, as necessary. He shall provide suitable and adequate storage room for materials and equipment during the progress of the work and be responsible for loss, or damage to, materials and equipment furnished by him, until the final acceptance of work.
 - B. All excavated materials, construction equipment, materials and equipment to be incorporated in the work shall be placed so as not to injure the work and so that free access can be had at all times to all parts of the work and to all public utility installations in the vicinity of the work.
 - C. Storage charges and demurrage charges by transportation companies and vendors, which result from delays in handling, shall be borne by the CONTRACTOR.
- 3.2 Work on State Highways and Rights-of-Way: (NONE REQUIRED THIS PRONECT)
- 3.3 Work on Railroad Rights-of-Way: (NONE REQUIRED THIS PROJECT)
- 3.4 Work on Gas Line Rights-of-Way: (NONE REQUIRED THIS PROJECT)
- 3.5 Sequence of Work: The WORK shall be carried on in such a manner and in a sequence designed so that work performed during each day shall be cleaned and neatly dressed at the end of that day. The WORK in any one area will be carried out so that interruption or access to and from homes and businesses will be minimized; and so that access to the area for pedestrians, fire protection and other vital services can be maintained at least on a limited basis. The OWNER may order a change in the sequence of the work if it is found that the circumstance of the construction operation, a section of the public or private thoroughfare will be blocked off or unduly inconvenienced. The CONTRACTOR will not be allowed to obstruct private driveways

or approaches or to dig up or occupy public streets and highways with the materials more than is absolutely necessary for the prosecution of the work.

3.6 Layout of Work: The CONTRACTOR shall lay out his work and shall be responsible for all measurements in connection therewith. All detailed construction surveys and aids such as cut stakes, batter boards, etc., shall be developed or provided by the CONTRACTOR. The CONTRACTOR shall verify all grades, lines, levels and dimensions shown on the Drawings or Specifications and report any errors or inconsistencies to the ENGINEER before commencing work.

3.7 Existing Utilities: See Specification Section 01016 - Protection of Existing Utilities.

3.8 Private Property: The CONTRACTOR will at no time use or occupy private property which falls outside of the rights-of-way or servitudes without obtaining authority independently from respective owners. CONTRACTOR shall remove all trash, debris, spoil, etc. that may be left or result from construction and shall not dispose of or leave said material on private property in the general vicinity of the project.

3.9 Preservation of Fences and Existing Vegetation: The CONTRACTOR will preserve and protect all fences and existing vegetation such as trees, shrubs, and grass on or adjacent to the site which do not unreasonably interfere with the construction as may be determined by the ENGINEER. The CONTRACTOR will be responsible for all unauthorized cutting or damaging of fences and trees and shrubs, including damage due to careless operation of equipment. Care will be taken by the CONTRACTOR in cutting fences and in falling trees authorized for removal to avoid any unnecessary damage to fences and vegetation that are to remain in place. Any limbs or branches of trees broken during such operations shall be trimmed with a clean cut and painted with an approved tree pruning compound if required by the ENGINEER. The CONTRACTOR will be liable for and will be required to replace or restore at his own expense all fences and vegetation not protected and preserved as required herein that may be destroyed or damaged. In residential areas, lawns shall be excavated only after the sod or turf has been carefully removed before commencement of trenching operations. Sod or turf will be wetted as required and stored until backfill is complete. Upon completion of backfill the turf and fences shall be replaced in a strictly neat and workmanlike manner, and lawn areas shall be restored as near as possible to their original condition prior to excavation.

3.10 Removal of Ground Water: Any pumping or bailing required to construct the WORK will be done at no extra cost to the OWNER.

- END OF SECTION -

SECTION 01016PROTECTION OF EXISTING UTILITIESPART 1 - GENERAL

1.1 Scope: This Section describes the work required to allow for the location and protection of existing underground or overhead utilities in the project work area.

1.2 General: The locations of existing underground utilities shown on the Drawings are approximate. The location of the existing utilities shown on the Drawings have, in part, been determined by information compiled and furnished by others.

PART 2 - PRODUCTS (NOT USED)PART 3 - EXECUTION

3.1 General: It shall be the responsibility of the CONTRACTOR to locate all underground utilities that may conflict with the proposed work. The CONTRACTOR shall be responsible for repairing all damage to underground utilities as a result of construction activities, at no cost to the OWNER. The CONTRACTOR shall contact Louisiana One Call by phone at 811 so that those utilities who participate in the Louisiana Once Call System may mark the field locations of their underground facilities. CONTRACTOR shall also contact owners of other underground facilities that may be affected for information as to their location.

3.2 Test Pits: Test Pits for the purpose of locating existing underground utilities shall be excavated and backfilled in accordance with Section 02221 - Test Pits.

3.3 Existing Utilities: The WORK will be located in the vicinity of existing water, sewer, gas, telephone and electric lines. The CONTRACTOR shall handle his work in a manner so as not to damage the existing utilities. The CONTRACTOR shall support by shoring, ties, or other means, the existing lines as necessary to prevent damage to them; and shall be responsible for any damage due to his work. The CONTRACTOR shall repair or pay for any repairs to them occasioned by damage done to them by his work. The CONTRACTOR shall notify the proper office when his work is near their facilities so that they may send persons to advise about the work which may affect their facilities. It will be the CONTRACTOR'S responsibility to locate the utilities in advance of his work, and plan his work ahead so as to best carry on his work in a manner to insure no damage to the existing facilities.

- END OF SECTION -



SECTION 01090ABBREVIATIONSPART 1 - GENERAL

1.1 Scope: To identify abbreviations and acronyms used in Contract Documents as referenced standards.

1.2 Quality Assurance:

A. Application: When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards.

B. Publication Date: Use the publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified. The revision in effect on the date of Contract Documents will be deemed the necessary and proper standard.

1.3 Abbreviations, Names, and Addresses of Organizations:

A. The following standards are referenced in the Contract Documents. The CONTRACTOR shall obtain copies of reference standards directly from the publication source when needed for proper performance of Work or when required for submittal by Contract Documents.

B. Abbreviation used in these Contract Documents shall refer to and designate the following:

ABBREVIATION	NAME AND ADDRESS	PHONE FAX WEB OR E-MAIL
AA	The Aluminum Association, Inc. 1400 Crystal Drive, Suite 430 Arlington, VA 22202	703-358-2960 703-358-2961 www.aluminum.org
AABC	Associated Air Balance Council 1518 K Street NW, Suite 503 Washington, DC 20005	202-737-0202 202-638-4833 www.aabc.com
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol St., N.W., Suite 249 Washington, DC 20001	202-624-5800 202-624-5806 www.transportation.org
ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331-3439	248-848-3700 248-848-3701 www.concrete.org

ACPA	American Concrete Pipe Association 8445 Freeport Parkway, Suite 350 Irving, TX 75063-2595	972-506-7216 972-506-7682 www.concrete-pipe.org
ADC	Air Diffusion Council 1901 N. Roselle Road, Suite 800 Schaumburg, IL 60195	847-706-6750 847-706-6751 www.flexibleduct.org
AF&PA	American Forest & Paper Association 1101 K Street NW, Suite 700 Washington, DC 20005	202-463-2700 202-463-2785 www.afandpa.org
AGC	Associated General Contractors of American 2300 Wilson Blvd, Suite 300 Arlington, VA 22201	703-548-3118 703-548-3119 www.agc.org
AGMA	American Gear Manufacturers Association 1001 N. Fairfax Street, Suite 500 Alexandria, VA 22314-1587	703-684-0211 703-684-0242 www.agma.org
AI	Asphalt Institute 2696 Research Park Drive Lexington, KY 40511-8480	859-288-4960 859-288-4999 www.asphaltinstitute.org
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006-5292	800-AIA-3837 www.aia.org
AISC	American Institute of Steel Construction One East Wacker Drive, Suite 700 Chicago, IL 60601-1802	312-670-2400 312-670-5403 www.aisc.org
AISI	American Iron & Steel Institute 25 Massachusetts Ave. N.W., Suite 800 Washington, DC 20001	202-452-7100 202-463-6573 www.steel.org
AITC	American Institute of Timber Construction 7012 S. Revere Parkway, Suite 140 Centennial, CO 80112	503-639-0651 503-684-8928 www.aitc-glulam.org
AMCA	Air Movement and Control Association International, Inc. 30 West University Drive Arlington Heights, IL 60004	847-394-0150 847-253-0088 www.amca.org
ANLA	American Nursery & Landscape Association 1200 G Street N.W., Suite 800 Washington, DC 20005	202-789-2900 202-789-1893 www.anla.org

ANSI	American National Standards Institute 25 West 43 rd Street, 4 th Floor New York, NY 10036	212-642-4900 212-398-0023 www.ansi.org
APA	APA - The Engineered Wood Association 7011 S. 19 th Street Tacoma, WA 98466-5333	253-565-6600 253-565-7265 www.apawood.org
AHRI	Air-Conditioning, Heating, & Refrigeration Institute 2111 Wilson Blvd., Suite 500 Arlington, VA 22201	703-524-8800 703-562-1942 www.ahrinet.org
ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191	800-548-2723 703-295-6222 www.asce.org
ASHRAE	American Society of Heating, Refrigerating & Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329	404-636-8400 404-321-5478 www.ashrae.org
ASME	American Society of Mechanical Engineers Two Park Avenue New York, NY 10016-5990	800-843-2763 212-591-7674 www.asme.org
TPI	Turfgrass Producers International 2 East Main Street East Dundee, IL 60118	847-649-5555 847-649-5678 www.turfgrasssod.org
ASTM	American Society for Testing & Materials 100 Barr Harbor Drive W. Conshohocken, PA 19428-2959	610-832-9500 610-832-9555 www.astm.org
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165-5874	571-323-3636 571-323-3630 www.awinet.org
AWPA	American Wood Protection Association 100 Chase Park South, Suite 116 Birmingham, Al 35244-1851	205-733-4077 205-733-4075 www.awpa.com
AWS	American Welding Society 8669 NW 36 Street, #130 Miami, FL 33126-6672	800-443-9353 305-443-7559 www.aws.org
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235	303-794-7711 303-347-0804 www.awwa.org

BIA	The Brick Industry Association 1850 Centennial Park Drive, Suite 301 Reston, VA 20191	703-620-0010 703-620-3928 www.gobrick.com
CDA	Copper Development Association, Inc. 260 Madison Avenue New York, NY 10016	212-251-7200 212-251-7234 www.copper.org
CLFMI	Chain Link Fence Manufacturers Institute 10015 Old Columbia Rd., Suite B-215 Columbia, MD 21046	301-596-2583 301-596-2594 www.chainlinkinfo.org
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg, IL 60173-4758	847-517-1200 847-517-1206 www.crsi.org
CSI	Construction Specifications Institute 110 S. Union St., Suite 100 Alexandria, VA 22314	800-689-2900 703-236-4600 www.csinet.org
CSSB	Cedar Shake & Shingle Bureau P.O. Box 1178 Sumas, WA 98295-1178	604-462-8961 604-462-9386 www.cedarbureau.org
DHI	Door & Hardware Institute 14150 Newbrook Drive, Suite 200 Chantilly, VA 20151-2232	703-222-2010 703-222-2410 www.dhi.org
DIPRA	Ductile Iron Pipe Research Association P.O. Box 19206 Golden, CO 80402	205-402-8700 205-402-8730 www.dipra.org
EJCDC	Engineers' Joint Contract Documents Committee American Council of Engineering Companies 1015 15 th Street, N.W. 8 th Floor Washington, DC 20005	202-347-7474 202-898-0068 www.ejcdc.org
FM Global	FM Global - Corporate Headquarters 270 Central Avenue Johnston, RI 02919-4949	401-275-3000 401-275-3029 www.fmglobal.com
GANA	Glass Association of North America 800 SW Jackson St., Suite 1500 Topeka, Kansas 66612-1200	785-271-0208 www.glasswebsite.com
GSA	GSA, Federal Supply Service Specification Section 1800 F St NW Washington, DC 20405-0001	703-605-2566 202-219-3004 www.gsa.gov
GA	Gypsum Association 6525 Belcrest Road, Suite 480 Hyattsville, MD 20782	301-277-8686 301-277-8747 www.gypsum.org

ICC	International Code Council 500 New Jersey Ave. NW 6 th Floor Washington, DC 20001	888-422-7233 202-783-2348 www.iccsafe.org
IEEE	Institute of Electrical & Electronics Engineers 3 Park Avenue, 17 th Floor New York, NY 10016-5997	212-419-7900 212-752-4929 www.ieee.org
IMI	International Masonry Institute 17101 Science Drive Bowie, MD 20715	800-803-0295 www.imiweb.org
LaDOTD	Louisiana Department of Transportation and Development 1201 Capitol Access Road Baton Rouge, LA 70802	225-379-1232 www.dotd.louisiana.gov
MBMA	Metal Building Manufacturer's Association 1300 Sumner Avenue Cleveland, OH 44115-2851	216-241-7333 216-241-0105 www.mbma.com
MFMA	Maple Flooring Manufacturer's Association One Parkview Plaza, Suite 800 Oakbrook Terrace, IL 60181	888-480-9138 847-686-2251 www.maplefloor.org
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120	215-697-3321 or 697-4834
ML/SFA	Metal Lath/Steel Framing Association 221 North LaSalle Street Chicago, IL 60603-1210	312-346-1862
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Road, Bldg. C, Suite 312 Glen Ellyn, IL 60137	630-942-6591 630-790-3095 www.naamm.org
NCMA	National Concrete Masonry Association 13750 Sunrise Valley Drive Herndon, VA 20171	703-713-1900 703-713-1910 www.ncma.org
NIST	National Institute of Standards & Technology 100 Bureau Drive, MS 2100 Gaithersburg, MD 20899-2100	301-975-4040 301-926-1559 nist.gov

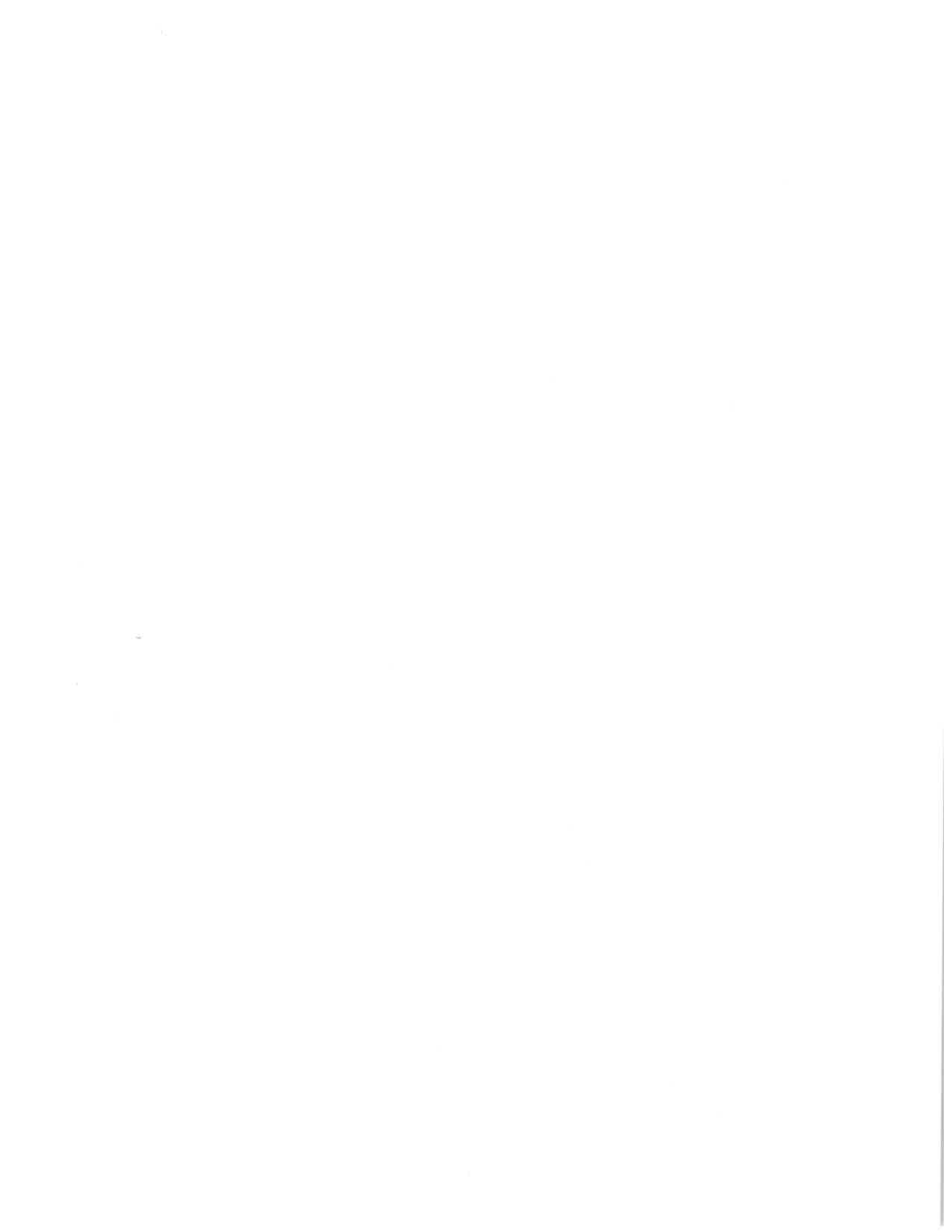
NEBB	National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877	301-977-3698 301-977-9589 www.nebb.org
NEMA	National Electrical Manufacturers Association 1300 North 17 th Street, Suite 900 Rosslyn, VA 22209	703-841-3200 703-841-5900 www.nema.org
NFPA	National Fire Protection Association 1 Battery March Park Quincy, MA 02169-7471	617-770-3000 617-770-0700 www.nfpa.org
NSPE	National Society of Professional Engineers 1420 King Street Alexandria, VA 22314-2794	703-684-2800 703-836-4875 www.nspe.org
NSWRA	National Waste & Recycling Association 4301 Connecticut Avenue NW, Suite 300 Washington, DC 20008	202-244-4700 202-966-4824 www.wasterecycling.org
NTMA	National Terrazzo and Mosaic Association, Inc. P.O. Box 2605 Fredricksburg, TX 78624	800-323-9736 888-362-2770 www.ntma.com
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077-1083	847-966-6200 847-966-9781 www.cement.org
PCI	Precast/Prestressed Concrete Institute 200 W. Adams St. #2100 Chicago, IL 60606	312-786-0300 312-786-0353 www.pci.org
RIS	Redwood Inspection Service 818 Grayson Road, Suite 201 Pleasant Hill, CA 94523	925-935-1499 925-935-1496 www.redwoodinspection.com
SDI	Steel Door Institute 30200 Detroit Road Westlake, OH 44145	440-899-0010 440-892-1404 www.steeldoor.org
SDI	Steel Deck Institute P.O. Box 426 Glenshaw, PA 15116	412-487-3325 412-487-3326 www.sdi.org
IGMA	Insulating Glass Manufacturers Alliance 27 N. Wacker Drive, Suite 365 Chicago, IL 60606	613-233-1510 613-482-9436 www.igmaonline.org

SJI	Steel Joist Institute 234 W. Cheves Street Florence, SC 29501	843-407-4091 843-626-5565 www.steeljoist.org
SMACNA	Sheet Metal & Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, VA 20151-1219	703-803-2980 703-803-3732 www.smacna.org
SSPC	The Society for Protective Coatings 800 Trumbull Drive Pittsburgh, PA 15205	412-281-2331 412-281-9992 www.sspc.org
TCNA	Tile Council of North America, Inc. 100 Clemson Research Boulevard Anderson, SC 29625	864-646-8453 864-646-2821 www.tileusa.com
UL	Underwriter's Laboratories, Inc. 2600 NW Lake Road Camas, WA 98607-8542	877-854-3577 360-817-6278 www.ul.com
UNI-BELL	Uni-Bell PVC Pipe Association 2711 LBJ Freeway, Suite 1000 Dallas, TX 75234	972-243-3902 972-243-3907 www.uni-bell.org
WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281	503-639-0651 503-684-8928 www.wclib.org
WWPA	Western Wood Products Association 1500 SW Fifth Avenue, Suite 870 Portland, OR 97201	503-224-3930 503-224-3934 www.2wwpa.org

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -



SECTION 01300CONSTRUCTION PROGRESS AND SCHEDULESPART 1 - GENERAL

1.1 Scope: This Section covers the establishment of a Pre-Construction Conference to discuss matters relating to the construction of the project prior to actual construction.

1.2 Pre-Construction Conference:

A. Prior to issuance of the Notice to Proceed for the work, a conference will be held to review the proposed construction schedule, to establish procedures for handling vendor drawings and other submissions, for processing applications for payment and to establish a working understanding between the parties as to the project.

B. Present at the Pre-Construction Conference will be the ENGINEER, the ENGINEER'S Project Representative, the CONTRACTOR and his Superintendent, and a Representative of the OWNER.

C. Submission of a detailed schedule indicating starting and completion dates various stages of the work shall be prepared in accordance with Paragraph 2.05 and 2.07 of the General Conditions of the Construction Contract. This progress schedule shall be approved by the ENGINEER prior to beginning work.

1.3 Submittals: CONTRACTOR shall submit the detailed schedule, prepared in accordance with Paragraph 2.05 of the General Conditions, indicating starting and completion dates of the various stages of the work.

1.4 Notice to Proceed: The OWNER will submit to the CONTRACTOR a written Notice to Proceed, stating a date on which the CONTRACTOR shall start the work. Contract time shall commence on the date specified in the Notice to Proceed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

SECTION 01330

SURVEY DATA

PART 1 - GENERAL

1.1 Scope: This Section covers the extent of survey data that will be available to the CONTRACTOR during the project and the requirements for construction layout.

1.2 Information Provided by the Engineer:

A. Reference marks for horizontal and vertical control are shown on the Drawings. The ENGINEER shall stake and or locate such one time prior to construction. The CONTRACTOR is responsible for construction layout.

1.3 Lines, Grades and Measurements:

A. The CONTRACTOR is responsible for all horizontal and vertical control.

B. The CONTRACTOR shall be responsible for installing the improvements to the grades and alignment and within the sites as shown on the Drawings.

C. All construction surveys and aids such as construction stakes, batter boards, etc., shall be developed or provided by the CONTRACTOR.

D. The accuracy of any method of staking shall be the responsibility of the CONTRACTOR.

E. The CONTRACTOR shall make measurements and check all dimensions necessary for the proper construction of the work. During the prosecution of the work, he shall make all necessary measurements to prevent misfitting in said work, and he shall be responsible thereof, and for the accurate construction of the work.

F. The CONTRACTOR shall be responsible for the preservation of all stakes and marks. If any stakes are disturbed, the CONTRACTOR shall not proceed with work until he has reestablished such points, marks, lines and elevations as may be necessary for the prosecution of the work. The reference marks shall be replaced at the CONTRACTOR'S expense if damaged or destroyed.

1.4 Dimensions of Existing Structures: Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new work, the CONTRACTOR shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

SECTION 01340SHOP DRAWINGS, SAMPLES AND PRODUCT DATAPART 1 - GENERAL

1.1 Scope: This section covers the submission and approval of shop drawings, samples, and other relevant project data.

1.2 Materials: Unless otherwise indicated on the Drawings or specified, only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the CONTRACTOR to be incorporated in the work shall be subject to the inspection and approval of the ENGINEER. No material shall be processed for, fabricated for, or delivered to the work without prior approval of the ENGINEER.

1.3 Submission Schedule: The CONTRACTOR shall submit data relating to the materials and equipment he proposes to incorporate into the work, in sufficient detail to enable the ENGINEER to identify the particular product in question and to form an opinion as to its conformity to the contract requirements. Such data shall be submitted in a manner similar to that specified for shop drawings.

1.4 Samples:

A. If the OWNER so requires, either prior to beginning or during the progress of the work, the CONTRACTOR shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the Specifications. Such samples, including concrete test cylinders, shall be furnished, taken, stored, packed, and shipped as directed, at the expense of the OWNER. Except as otherwise specified, the OWNER shall make arrangements for, and pay for, the tests. Any subsequent tests required due to failure of samples to meet specifications shall be at the expense of the CONTRACTOR.

B. When required, the CONTRACTOR shall furnish to the OWNER triplicate sworn copies of manufacturer's shop or mill test (or reports from independent testing laboratories) relative to materials, equipment performance ratings and concrete data.

C. After approval of the samples, data, etc. the materials and equipment used on the work shall correspond therewith.

1.5 Shop Drawings/Submittals:

A. The CONTRACTOR shall submit for approval five (5) print copies of shop drawings of materials fabricated especially for this contract, and of equipment and materials of which such drawings are specifically requested. Two copies will be returned to the CONTRACTOR.

B. Such drawings shall show the principal dimensions, weight, structural and operating features, performance characteristics and wiring diagrams, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawings. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for this contract.

C. When so specified or if considered by the ENGINEER to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc. may be submitted for approval in place of shop drawings. In such case the requirements shall be as specified for shop drawings, insofar as applicable.

D. No material shall be purchased or fabricated especially for this Contract until the required shop drawings have been submitted and reviewed as conforming to the contract requirements. All materials and work involved in the construction shall then be as represented by said drawings.

E. Prior to submitting shop drawings to the OWNER, the CONTRACTOR shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the drawings and specifications in all respects.

F. The ENGINEER'S review of shop drawings will follow a general check made to ascertain conformance with the design concept and functional result of the project and compliance with the information given in the contract documents. The CONTRACTOR shall be responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to techniques of construction; and for coordination of the work of all trades.

G. The CONTRACTOR shall make any corrections required by the ENGINEER and shall return the required number of corrected copies of shop drawings. The CONTRACTOR shall resubmit shop drawings until approved.

H. At the time of each submission or resubmission, the CONTRACTOR shall direct specific attention, in writing, to deviations that the shop drawings or samples may have from the requirements of the contract documents or corrections required by the OWNER on previous submissions.

I. The ENGINEER'S approval of shop drawings and samples shall not relieve the CONTRACTOR from his responsibility for any deviations from the requirements of the contract documents, unless the ENGINEER has been notified, in writing, and has given his written approval to such deviation, nor shall any approval by the ENGINEER relieve the CONTRACTOR from responsibility for errors and omissions in shop drawings.

J. The CONTRACTOR shall be responsible for and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of work prior to the completion of the review by ENGINEER of the necessary Shop Drawings.

K. The CONTRACTOR shall utilize a Sequential Numbering System for submittals (1-999). Resubmittals or confirming material shall be assigned a letter next to the submittal number, i.e., A - second submittal, B - third submittal, etc.

L. Resubmittals will be handled in the same manner as first submittals. The CONTRACTOR shall direct specific attention to revisions other than the corrections requested by the ENGINEER on previous submissions by written details or markings on the resubmitted Shop Drawings. The CONTRACTOR shall make any corrections required by the ENGINEER.

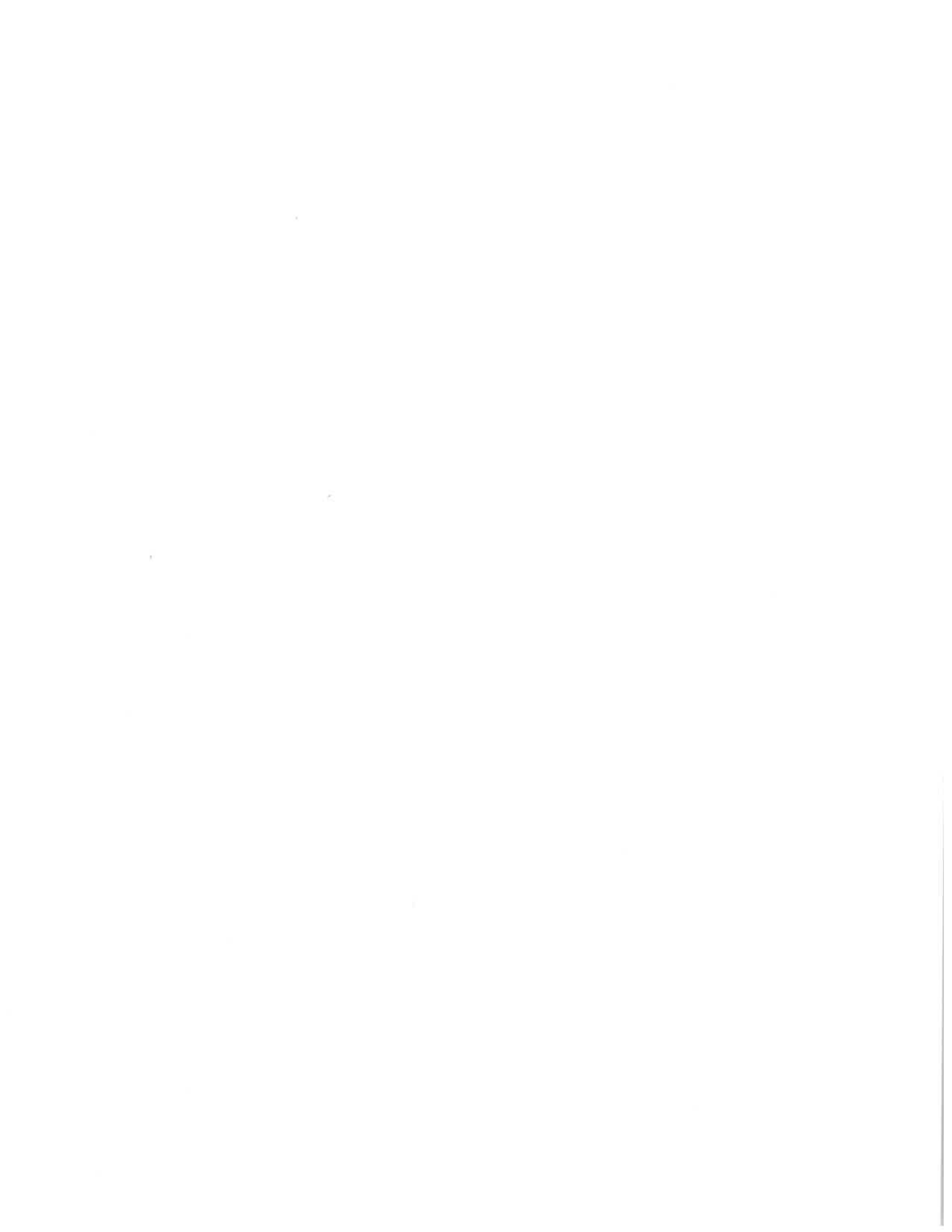
M. If the CONTRACTOR considers any correction indicated on the drawings to constitute a change to the Contract Drawings or Specifications, the CONTRACTOR shall give written notice thereof to the ENGINEER.

1.6 Record Documents: Refer to Section 01720 - RECORD DRAWINGS.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -



SECTION 01410TESTING LABORATORY SERVICESPART 1 - GENERAL

1.1 Scope: This Section describes the Testing Laboratory Services to be included in this project.

1.2 Requirements: OWNER will employ and pay for the services of an Independent Testing Laboratory to perform testing specifically indicated on the Contract Documents or specified in the Specifications and may at any other time elect to have materials and equipment tested for conformity with Contract Documents.

A. CONTRACTOR shall cooperate with the laboratory to facilitate the execution of its required services.

B. Employment of the laboratory shall in no way relieve CONTRACTOR's obligations to perform the WORK of the Contract.

1.3 Limitations of Authority of Testing Laboratory: Laboratory is not authorized to:

A. Release, revoke, alter or enlarge on requirements of Contract Documents.

B. Approve or accept any portion of the WORK.

C. Perform any duties of the CONTRACTOR.

1.4 Contractor's Responsibilities:

A. Cooperate with laboratory personnel, provide access to WORK, to Manufacturer's operations.

B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The ENGINEER may require the CONTRACTOR to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the CONTRACTOR, and no extra charge to the OWNER shall be allowed on account of such testing and certification.

E. Furnish incidental labor and facilities:

1. To provide access to WORK to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.
4. For storage and curing of test samples.

F. If the test results indicate the material or equipment complies with the Contract Documents, the OWNER shall pay for the cost of the testing laboratory. If the tests and any subsequent retests indicate the materials and equipment fail to meet the requirements of the Contract Documents, the CONTRACTOR may pay for the laboratory costs directly to the testing firm or the total of such costs shall be deducted from any payments due the CONTRACTOR.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

SECTION 01500TEMPORARY FACILITIESPART 1 - GENERAL

1.1 Scope: This section covers the installation of temporary facilities for the use of the CONTRACTOR during the construction project.

1.2 Precautions Against Weather: During adverse weather conditions and against the possibility thereof, the CONTRACTOR shall take all necessary precautions so that the work shall be properly done and be satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building paper shelter, or other approved means.

1.3 Potable Water: The CONTRACTOR shall make all necessary applications and arrangements and pay all fees and charges for any potable water service necessary for the proper completion of the work during its entire progress. The CONTRACTOR shall provide and pay for all temporary connections, meters, etc.

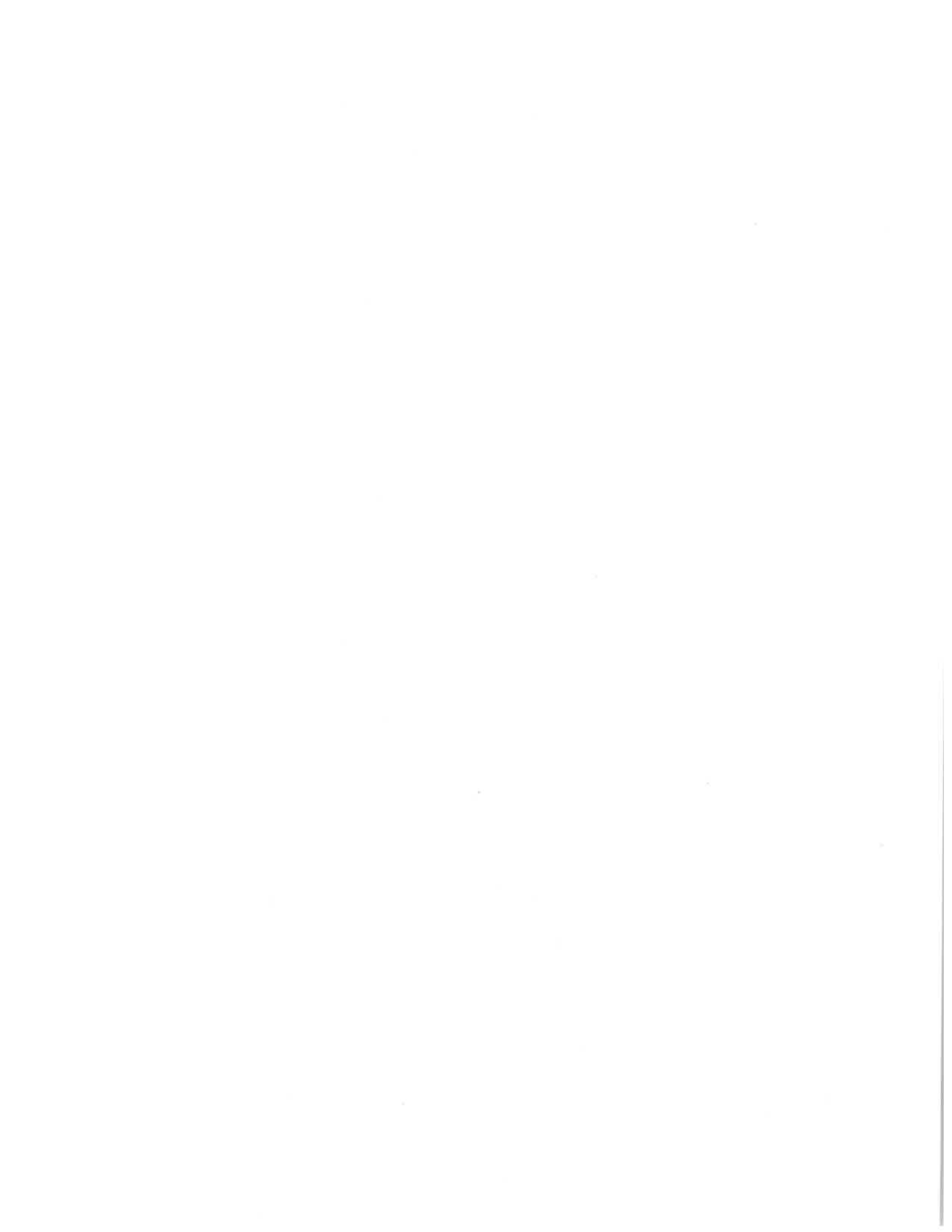
1.4 Electrical Energy: The CONTRACTOR shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of the work during its entire progress. The CONTRACTOR shall provide and pay for all temporary wiring, switches, connections, and meters. There shall be sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

1.5 Sanitary Facilities: The CONTRACTOR shall provide adequate sanitary conveniences for the use of those employed on the work. Such conveniences shall be made available when the first employees arrive on the work, shall be properly secluded from public observation, and shall be constructed and maintained in suitable numbers and at such points and in such manner as may be required or approved. The CONTRACTOR shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the work on the land of the OWNER, or on adjacent property.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -



SECTION 01560MAINTENANCE OF WORK SITEPART 1 - GENERAL

1.1 Scope: This section covers the general overall maintenance of the entire project site to assure the safety and protection of the CONTRACTOR'S employees, general public, materials incorporated into the project, and property within the project limits.

1.2 Safety and Protection:

A. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. He shall take all necessary precautions for the safety of employees and the public, and shall provide the necessary protection to prevent damage, injury or loss to:

1. All employees involved with the work and other persons who may be affected thereby.
2. All the work and all materials or equipment to be incorporated therein, whether in storage on or off the site.
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
4. Existing site piping, structures, electrical services, water, and other underground properties.

B. The CONTRACTOR shall notify owners of adjacent utilities when prosecution of the work may affect them. All damage, injury or loss to any property referred to in Paragraphs 1.2.A.3 and 1.2.A.4 above, directly or indirectly, in whole or in part, by CONTRACTOR, any part, to the fault or negligence of CONTRACTOR, shall be replaced or restored to at least original condition at CONTRACTOR'S expense. CONTRACTOR'S duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR as described herein that work is acceptable.

C. The CONTRACTOR shall not load or permit any part of any structure to be loaded with a weight that would endanger its safety.

D. The CONTRACTOR shall provide protection of the work from freezing and from other elements which would be harmful to it. The CONTRACTOR shall furnish heat or protective shelters or temporary buildings as required for the prosecution and protection of the work.

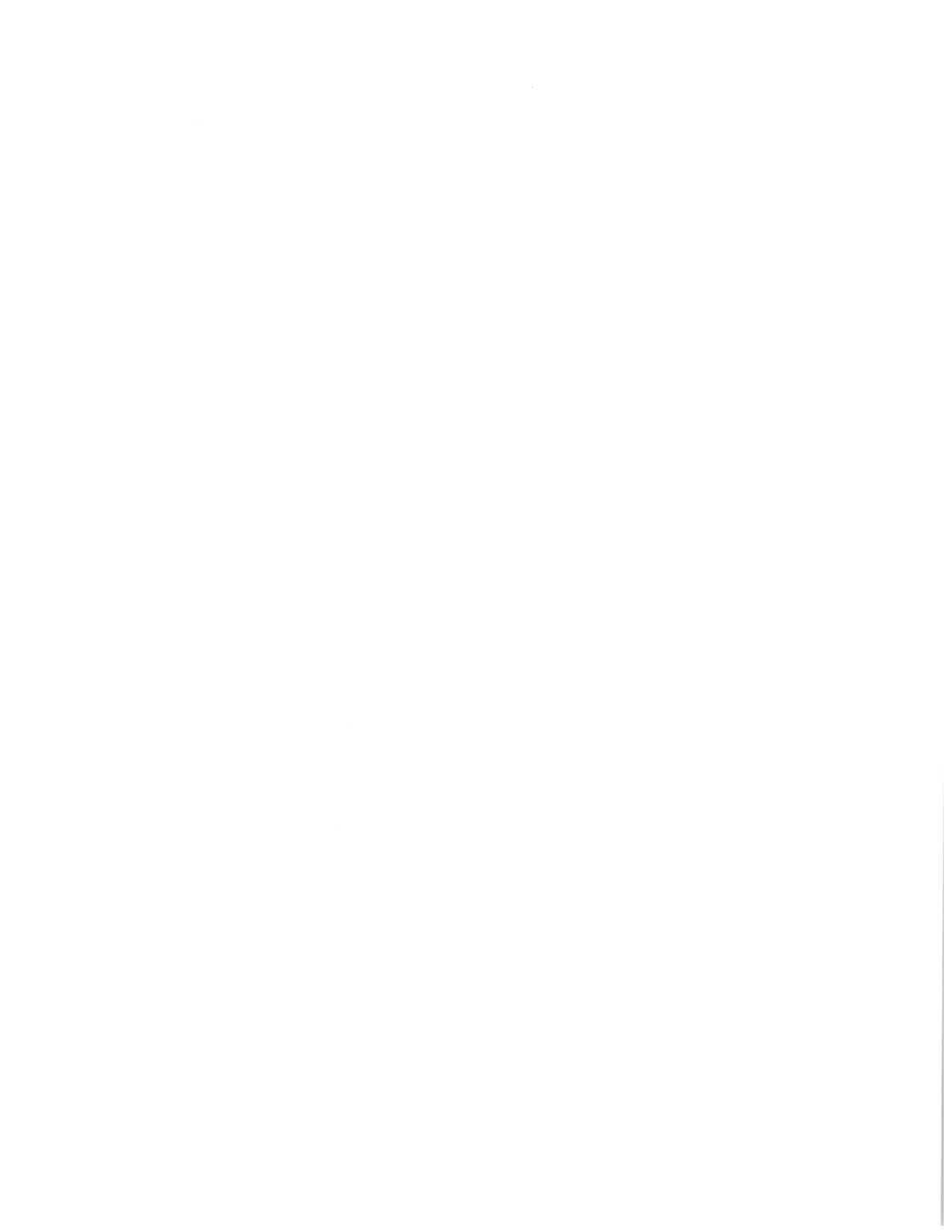
- E. The CONTRACTOR shall take all necessary precautions for the safety of employees on the work and shall comply with all applicable provisions of Federal, State and local safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the work is being performed. He shall erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards and barricades for the protection of employees on the work and the safety of others employed near the work and public, and shall post danger signs and warning lights warning against the hazards created by such features of the construction as protruding nails, hoists, excavations, elevator hatchways, scaffoldings, window openings, stairways and falling materials.
- F. The CONTRACTOR shall designate a responsible member of its organization on the work whose duty shall be the prevention of accidents.
- G. The CONTRACTOR shall immediately report in writing, giving full details, to the OWNER all serious accidents which arise out of or in connection with the performance of the work, whether on or adjacent to the site, which cause death, serious personal injury or substantial property damage is caused, the accident shall be reported immediately by telephone or messenger to the ENGINEER. If a claim is made or suit is filed by anyone against the CONTRACTOR or any Sub-Contractor on account of any accident, the CONTRACTOR shall promptly report the facts in writing to the ENGINEER, with a copy to the OWNER, giving full details of the claim.
- H. The CONTRACTOR shall assume all risks of loss damage of any kind to any vehicles, machinery, equipment, materials or supplies which he shall provide in doing the work.
- I. The CONTRACTOR shall take all precautions to prevent damage to the work by the elements, storm or by water entering the site of the work directly or through the ground. In case of damage by the elements, storm or water, the CONTRACTOR shall make such repairs or replacements or rebuild such parts of the work as the ENGINEER may require in order that the work may be completed as required.
- J. The CONTRACTOR shall post illuminated warning and danger signs so as to alert all persons against any hazards created by the work being done under this contract.
- K. The CONTRACTOR shall maintain drainage which may be interrupted by his work and shall provide pumping if necessary to route drainage water around the work.
- 1.3 Protection of Public: The CONTRACTOR shall conduct his work so as to interfere as little as possible with the private personal activities of residents, private business and public business and travel. Wherever necessary or required, and at his own expense, he shall maintain fences, furnish full-time or part-time watchmen, guards, flagman and or like protective personnel, maintain lights, and take such actions, precautions as may be necessary to protect life and property.

1.4 Nuisance and Dust Control: During the course of the work the CONTRACTOR shall take steps at his cost as necessary to prevent public nuisance on-site, holding down or eliminating the raising of dust or spraying of mud from construction operation, vehicular traffic, wind or other causes.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -



SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 Scope: This section covers requirements for closeout of work.

1.2 Requirements: The CONTRACTOR shall comply with the requirements stated in the General Conditions and in the Specifications for administrative procedures in closing out the Work.

1.3 Substantial Completion:

A. When the CONTRACTOR considers the Work is substantially complete, he shall submit to the ENGINEER:

1. A written notice that the Work or designated portion thereof is Substantially Complete.
2. A list of items to be completed or corrected.

B. Within five (5) working days after receipt of such notice, the ENGINEER will make an inspection to determine the status of completion. The ENGINEER will prepare a punchlist that will include a cost estimate for each particular item of work based upon mobilization, labor, materials, and equipment costs as required by Louisiana Revised Statute 38:2248.B. The dollar amounts so established for uncompleted or unsatisfactory minor work shall be withheld by the OWNER, exclusive of statutory retainage, until the work is satisfactorily completed. Listed items shall be paid for upon expiration of the 45 day lien period. The ENGINEER'S opinion as to the status of completion shall be based on completion of the following as applicable:

1. Installation of all piping, fittings, specials, valves including pressure, leakage or other required tests.
2. Installation of all pumping equipment.
3. Installation or construction of structures including all required protective or aesthetic coatings or devices including required tests.
4. Installation of electrical conduits, wiring, load centers, controls, and all other electrical elements as required including tests, inspections, and approval by local agencies for compliance with ordinances and codes.
5. Backfill and compaction of backfill as indicated by required tests for all pipelines and other subterranean installations.

6. Installation or restoration of pavements including required tests for subbase, base and pavement materials. Pavements shall not be individually considered and shall be considered only with other portions of the Work requiring the installation or restoration of pavement.

7. All painting required by the Contract Documents except for touch-up.

8. Topsoiling, final grading, fertilizing, seeding, sodding, or landscaping except for growth of vegetation and watering to establish the required ground cover of vegetative growth.

9. Release of all permits whether or not the permit was acquired by the CONTRACTOR.

10. All required instructions for the OWNER'S operation and maintenance personnel including submittal of operations and maintenance manuals and warranties and bonds as specified elsewhere, if applicable to this project.

11. Installation of all valve pads, hydrants and service transfers.

C. Should the ENGINEER determine that the Work is not substantially complete.

1. The ENGINEER will promptly notify the CONTRACTOR in writing, giving the reasons therefore in accordance with the General and Supplemental Conditions.

2. CONTRACTOR shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the ENGINEER.

3. The ENGINEER will reinspect the Work.

D. When the ENGINEER finds that the Work is substantially complete, he will:

1. Prepare and deliver to OWNER a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment in accordance with the General and Supplemental Conditions and in accordance with Louisiana Revised Statute 38:2243.B. as outlined in 1.3.B above.

2. After consideration of any objections made by the OWNER as provided in the General and Supplemental Conditions of the Contract, and when the ENGINEER considers the Work substantially complete, he will execute and deliver to the OWNER and the CONTRACTOR a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.4 Final Inspection:

A. When CONTRACTOR considers the Work is complete, he shall submit written certification that:

1. Contract Documents have been reviewed.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.
4. Equipment and systems have been tested in the presence of the ENGINEER and OWNER'S representative and are operational.
5. Work is completed and ready for final inspection.

B. The ENGINEER will make an inspection to verify the status of completion within five (5) working days after receipt of such certification.

C. Should the ENGINEER consider that the Work is incomplete or defective:

1. The ENGINEER will promptly notify the CONTRACTOR in writing, listing the incomplete or defective work.
2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the ENGINEER that the Work is complete.
3. The ENGINEER will reinspect the Work.

D. When the ENGINEER finds that the Work is acceptable under the Contract Documents, he shall request the CONTRACTOR to make closeout submittals.

1.5 Reinspection Fees: Should the ENGINEER perform reinspections due to failure of the Work to comply with the claims of status of completion made by the CONTRACTOR:

- A. OWNER will compensate the ENGINEER for such additional services.
- B. OWNER will deduct the amount of such compensation from the final payment to the CONTRACTOR.

1.6 Contractor's Closeout Submittals To Engineer:

- A. Evidence of compliance with requirements of governing authorities.
- B. Project Record Documents: Requirements of Section 01720 - RECORD DRAWINGS.

- C. Operation and Maintenance Manual: Requirements of Section 01730 - OPERATION AND MAINTENANCE MANUAL.
- D. Warranties and Bonds: Requirements of Section 01740 - WARRANTIES AND BONDS.

1.7 Final Adjustment of Accounts:

- A. Submit a final statement of accounting to the ENGINEER.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Unit Prices.
 - c. Deductions for uncorrected Work.
 - d. Penalties and Bonuses.
 - e. Deductions for liquidated damages.
 - f. Deductions for reinspection payments.
 - g. Other adjustments.
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. ENGINEER will prepare a final Change Order reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.8 Application For Payment: Upon receipt of approval of the final Change Order, the CONTRACTOR shall submit an application for Payment in accordance with procedures and requirements stated in the General Conditions.

1.9 Contract Clear Lien Certificate and Payment of Retainage:

- A. Upon the OWNER'S acceptance of the work, the ENGINEER shall make filings with the Parish Clerk of Court as required by Louisiana State Public Contract Statute.
- B. In accordance with the Louisiana State Public Contract Statute, the Clerk shall issue to the CONTRACTOR a Clear Lien and Privilege Certificate upon expiration of a period of not less that forty-five (45) days, provided no liens are recorded against the Project.
- C. Upon receipt of the Clear Lien and Privilege Certificate, the CONTRACTOR shall submit an Application for Payment to the ENGINEER requesting the release of the Project retainage with the certificate attached as evidence of authority for the OWNER to pay the retainage.
- D. The ENGINEER shall review the Application for Payment of the Project retainage and if in order shall transmit the application to the OWNER for payment.
- E. In accordance with the General Conditions, the OWNER shall release, the project retainage and make payment to the CONTRACTOR the legal sum of the retainage for which the CONTRACTOR is entitled.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

1

SECTION 01710CLEANINGPART 1 - GENERAL

1.1 Scope: This section covers cleaning which shall include daily "policing" of the work and surrounding areas to clear general debris, waste paper, wood scraps, broken concrete, and other objectionable material along with the final cleanup of site required for project acceptance.

1.2 Disposal Requirements: Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws.

PART 2 - PRODUCTS (NOT USED)PART 3 - EXECUTION3.1 General:

A. Execute daily cleaning to keep the Work, the site, and adjacent properties free from accumulations of waste materials, rubbish and wind-blown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials and debris rubbish. All waste materials including containers, food debris and other miscellaneous materials must be disposed of daily in on-site containers.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.2 Final Cleaning:

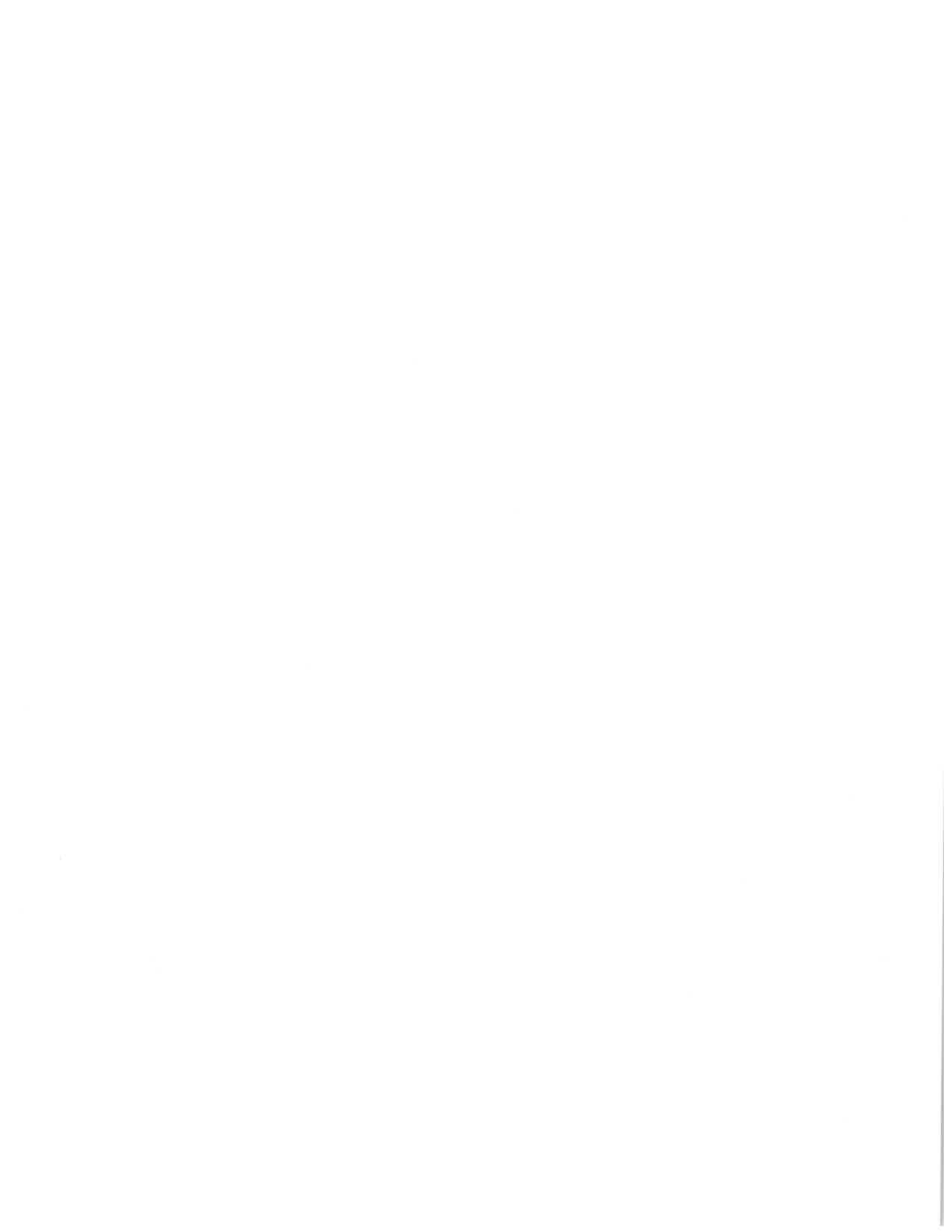
A. Employ skilled workmen for final cleaning.

B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

C. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

D. Prior to final completion, CONTRACTOR shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas to verify that the entire Work is clean.

- END OF SECTION -



SECTION 01720RECORD DRAWINGSPART 1 - GENERAL

1.1 Scope: This section covers technical requirements and information for the preparation and submission of Record Drawings.

1.2 General: As part of the contract drawings furnished, the CONTRACTOR will also be furnished with a full size set of Drawings for use in preparation of "Record Drawings". The Record Drawings shall be a record of the construction as installed and completed by the CONTRACTOR. They shall include all the information shown on the contract set of drawings and a record of all deviations, modifications, or changes from those drawings, however minor, which were incorporated in the work, all additional work not appearing on the contract drawings, all changes which are made after final inspection of the contract work and the location and size of all uncharted existing structures encountered.

PART 2 - PRODUCT (NOT USED)PART 3 - EXECUTION

3.1 Record Drawings: The CONTRACTOR shall mark up the Drawings to show as-builts conditions, hereafter called Record Drawings. All changes from the contract plans which are made in work or additional information which might be uncovered in the course of construction, including uncharted structures, shall be accurately and neatly recorded as they occur by means of details and notes. All changes and/or required additions to the Record Drawings shall be clearly identified in a color contrasting to the blue line record drawing prints. The Record Drawings shall show the following information, but not be limited hereto.

A. The location and description of any utility lines or other installation of any kind or description known to or found to exist within the construction area. The location of exterior utilities includes actual measured horizontal distances from utilities to permanent facilities/features. These measurements shall be within an accuracy range or six (6") inches and shall be shown at sufficient points to permit easy location of utilities for future maintenance purposes. Measurements shall be shown for all change of direction points and all surface or underground components such as valves, manholes, drop inlets, cleanouts, meter, etc. The general depth of range of each underground utility line shall be shown (i.e. 3' to 4' depth). The description of exterior utilities includes the actual quantity, size and material of utility lines.

B. Correct grade or alignment of roads, structures or utilities if any changes were made from contract plans.

C. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the CONTRACTOR including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, etc.

D. The topography and grades of all drainage installed or affected as a part of the project construction.

3.2 Record Drawing Review: As a part of the prefinal inspection for each item of work the Record Drawings will be reviewed. They must comply with this specification prior to scheduling the final inspection, and/or prior to substantial completion of the item of work.

3.3 Record Drawing Final Submittal: Prior to scheduling the final acceptance inspection of the remaining work items, the Record Drawings shall be completed and delivered to the ENGINEER for his review and approval. If, upon review, the drawings are found to contain errors and/or omissions, they will be returned to the CONTRACTOR for corrections. Failure of any CONTRACTOR to make timely delivery of the Record Drawings on any/all items of work will be cause for the OWNER to delay final payment.

3.4 Withholding for Record Drawings: Failure by the CONTRACTOR to maintain current and satisfactory Record Drawings in accordance with these requirements will result in withholding from progress payments an amount determined by the ENGINEER as the value of the subject drawings, and will indicate this unearned amount on monthly payment estimates until the CONTRACTOR has fulfilled the contract requirements.

3.5 Drafting: All additions and corrections to the record drawings shall be neat, clean and legible.

3.6 Record Drawing Designation: When final revisions have been completed, each drawing shall be lettered or stamped with the words "RECORD DRAWINGS" in letters at least 3/16" high placed below the title block between the border and the trim line. The date of completion and the words "REVISED RECORD DRAWINGS" shall be placed in the revision block above the latest existing revision notation.

- END OF SECTION -

SECTION 01730OPERATION AND MAINTENANCE DATAPART 1 - GENERAL

1.1 Scope: This Section covers the preparation of an Operation and Maintenance Manual by the CONTRACTOR for equipment provided under this Contract.

1.2 Format:

- A. Prepare data in the form of an instructional manual.
- B. Binders: Commercial quality, 8½ x 11, three-ring binders with hardback, cleanable, plastic covers; four (4") inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of Project; identify subject matter of contents.
- D. Arrange content by section numbers and sequence of Table of Contents of this Project Manual.
- E. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: Manufacturer's printed data, or typewritten data.
- G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.3 Contents:

- A. Table of Contents: Provide title of Project; names, addresses, and telephone number of ENGINEER and CONTRACTOR with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems.

E. Type Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.4 Submittals:

A. Submit one (1) copy of completed volumes in final form fifteen (15) days prior to final inspection. Copy will be returned after final inspection with ENGINEER comments. Revise content of documents as required prior to final submittal.

B. Submit four (4) copies of revised volumes of data in final form within ten (10) days after final inspection.

1.5 Schedule: Manufacturer's field services, operation and maintenance manuals, and certificates of compliance shall be provided for the items of equipment indicated in the following schedule:

SPEC. SECTION	TYPE OF EQUIPMENT	MFG'S FIELD SERVICE	OPER. & MAINT. MANUAL
11307	Sewer Pump System	YES	YES
11307	Pump Station Control System	YES	YES
11407	Pressure Transmitter System	NO	YES
13800	Hoist	NO	YES
13900	Sewer Gas Detection System	YES	YES
15600	Magnetic Flow Meter	YES	YES
15700	Buried Plug Valve	NO	YES
15800	Intake and Exhaust Fans	NO	YES
15800	Fan Control System	YES	YES
16610	Generator and Control System	YES	YES
16695	Pump Station Control System	YES	YES

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

SECTION 01740WARRANTIES AND BONDSPART 1 - GENERAL

1.1 Scope: This Section includes preparation and submittal of product warranties and bonds.

1.2 Form of Submittals:

A. Bind in commercial quality, 8½ x 11 inch three-ring side binders with hardback, cleanable, plastic covers.

B. Label cover of each binder with typed or printed title WARRANTIES AND BONDS, list title of Project; name, address and telephone number of CONTRACTOR and equipment supplier; and name of responsible principal.

C. The Table of Contents shall be neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification Section in which specified, and the name of the product or work item.

D. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1.3 Preparation of Submittals: Obtain warranties and bonds, executed in triplicate by responsible Subcontractors, suppliers and manufacturers, within ten (10) days after completion of the applicable item or work. Except for items put into use with OWNER'S permission, leave date of beginning of time of warranty until the date of Substantial Completion is determined. Verify that documents are in proper form and contain full information. Co-execute submittals when required. Retain warranties and bonds until time specified for submittal.

1.4 Time of Submittals: Make submittal within ten (10) days after Date of Substantial Completion, prior to final Application for Payment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

SECTION 01750

TRENCH SAFETY SYSTEM

PART 1 – GENERAL

1.1 Scope: This Section covers the requirements for construction safety related to excavations for trenches and / or excavations for structures or any other related excavations required for the completion of this project including all work, labor, materials, tools, equipment and incidentals required as shown on the DRAWINGS, as specified herein, and or as directed by the ENGINEER, with all cost being the responsibility of the CONTRACTOR.

1.2 Definitions:

A. The trench safety system requirements will apply to larger open excavations if the erection of structures or other installations limits the space between the excavation slope and this installation to dimensions equivalent of a trench as defined.

B. A trench shall be defined as a typically narrow excavation (in relation to its depth) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 20 feet.

C. Trench Safety Systems include but are not limited to sloping, sheeting, trench boxes or trench shields, sheet piling, cribbing, bracing, shoring, dewatering or diversion of water to provide adequate drainage.

1.3 Regulatory Requirements: Install and maintain trench safety systems in accordance with the detail specifications set forth in the provision of Excavations, Trenching, and Shoring, Federal Occupation Safety and Health Administration (OSHA) Standards, 29 CFR, Part 1926, Subpart P, as amended. The Sections that are incorporated into these specifications by reference include Sections 1926.650 through 1926.652.

1.4 Miscellaneous:

A. Install and maintain trench safety systems in accordance with provisions of OSHA 29 CFR.

B. A licensed professional ENGINEER registered in Louisiana, as identified in the CONTRACTOR's Trench Safety Program, shall verify that trench boxes and other pre manufactured systems are certified for the actual installation conditions.

C. CONTRACTOR or CONTRACTOR's independently retained consultant shall make daily inspections of the trench safety systems to ensure that the installed systems and operations meet OSHA 29 CFR and other personnel protection regulations requirements.

D. If evidence of possible cave in's or slides is apparent, CONTRACTOR shall immediately stop work in the trench and move personnel to safe locations until the necessary precautions have been taken by CONTRACTOR to safeguard personnel entering the trench.

E. Maintain a permanent record of daily inspections.

F. CONTRACTOR shall verify specific applicability of the selected or specially designed trench safety systems to each field condition encountered on the project.

PART 2 – PRODUCTS – (NOT USED)

PART 3 – EXECUTION – (NOT USED)

END OF SECTION

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 2 – SITE WORK

- Section 02102 - CLEARING, GRUBBING AND STRIPPING
- Section 02201 - SELECT FILL MATERIAL
- Section 02202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS
- Section 02203 - EXCAVATION, EMBANKMENT AND BACKFILL
- Section 02221 - TEST PITS
- Section 02401 - STONE SITE ACCESS DRIVE
- Section 02530 - DEWATERING
- Section 02561 - WATER SERVICE AND APPURTENANCES
- Section 02601 - PORTLAND CEMENT CONCRETE PAVEMENT
- Section 02705 - CHAIN LINK FENCES AND GATES
- Section 02706 - SIDEWALKS AND INCIDENTAL P.C. CONCRETE
- Section 02717 - EROSION CONTROL AND SOIL STABILIZATION
- Section 02726 - BEDDING MATERIAL
- Section 02732 - SEWER FORCE MAIN PIPE AND APPURTENANCES
- Section 02903 - WARNING SIGNS

SECTION 02102CLEARING, GRUBBING AND STRIPPINGPART 1 - GENERAL

1.1 Scope: This Section covers all clearing, grubbing and stripping work required for the construction of the project.

1.2 Clearing and Grubbing:

A. The CONTRACTOR shall clear, grub and strip areas as designated on the Drawings or required by the ENGINEER dependent upon existing field conditions as required to construct the project.

B. Care shall be taken to leave nothing of material size or accumulated mass which thereafter may float or obstruct any pipe or waterway.

C. The CONTRACTOR shall not cut or injure any trees or other vegetation outside the limits of the areas on which work is to be done without permission and he shall guard against like action by his employees.

1.3 Stripping: The CONTRACTOR shall strip areas which are designated by the ENGINEER for the proposed location of any aboveground facility. The limits of the stripping shall be within the area so designated.

1.4 Right to Wood and Logs: The respective owners of the land over which an easement pass shall have the right to cut and remove logs and other wood of value in advance of the CONTRACTOR'S operations. All remaining logs and other wood removed in the course of clearing shall become the property of the CONTRACTOR.

PART 2 - PRODUCTS

2.1 Equipment:

A. Equipment used for clearing and grubbing shall be at the CONTRACTOR'S option.

B. Blasting will not be permitted.

PART 3 - EXECUTION

3.1 Clearing:

A. The CONTRACTOR shall cut or otherwise remove all trees, saplings, brush and vines, (except those trees and other vegetation marked for retention by the OWNER); windfalls, logs and trees lying on the ground; dead trees and stubs more than one foot

high above the ground surface, but not their stumps; trees which have been partially uprooted by natural or other causes, including their stumps; and other matter such as snags, leaves, sawdust, bark and refuse.

B. Except where clearing is done by uprooting with machinery or where stumps are left longer to facilitate subsequent grubbing operations; trees, stumps, and stubs to be cleared shall be cut as close to the ground surface as practicable, with no more than six (6) inches remaining above the ground surface in the case of small trees, and twelve (12") inches in the case of large trees. Saplings, brush, and vines shall be cut off close to the ground.

3.2 Grubbing: The CONTRACTOR shall remove all stumps within the servitude or designated project area completely, remove all roots larger than three (3") inches in diameter to a depth of 18 inches, and remove all roots larger than 1/2 inch in diameter to a depth of six (6) inches. Such depths shall be measured from the existing ground surface or the proposed finished grade, whichever is lower.

3.3 Stripping: Topsoil shall be removed to its full depth where it occurs in areas to be filled or excavated and shall be stockpiled for use in finish grading. All precautions shall be taken to avoid contamination of topsoil by other excavated material and to prevent washing of topsoil by other excavated material and to prevent washing of topsoil into excavations, drainage or watercourses.

3.4 Depressions: Except in areas to be excavated, depressions caused by grubbing operations shall be filled with suitable material which shall be compacted to conform to the surrounding ground.

3.5 Disposal:

A. All material collected in the course of the clearing and grubbing that will not remain shall become the property of the CONTRACTOR and shall be disposed of in a manner satisfactory to the OWNER. Such disposal shall be carried on after removal of the materials in the clearing and grubbing operations and shall not be left until the final clean up period.

B. Burning shall not be done except at locations and in conformity with the regulations and requirements of the governing air pollution control and fire authorities. The CONTRACTOR shall make all necessary arrangements and pay for all necessary permits. The CONTRACTOR shall take all precautions necessary to prevent the spread of fire outside the immediate areas where burning is being done.

C. Prior to depositing surplus material at any off site location, the CONTRACTOR shall obtain a written agreement between himself and the owner of the property on which the disposal is proposed giving permission for the CONTRACTOR to enter and deposit the material at no expense to the project OWNER. A copy of the agreement shall be furnished to the OWNER.

- END OF SECTION -

SECTION 02201

SELECT FILL MATERIAL

PART 1 - GENERAL

1.1 Scope: This Section covers providing and placing select fill material in areas where indicated on the Drawings, as specified herein and or as directed by the Engineer.

1.2 Referenced Standard: State of Louisiana Standard Specification for Roads and Bridges, 2016 Edition.

Section 701.....Culverts and Storm Drains

Reference made therein to measurement and payment are hereby deleted.

PART 2 - PRODUCTS

2.1 Select Fill Material: Select fill material shall be in conformance with Section 701.08.1 Type B of the referenced Standard.

PART 3 - EXECUTION

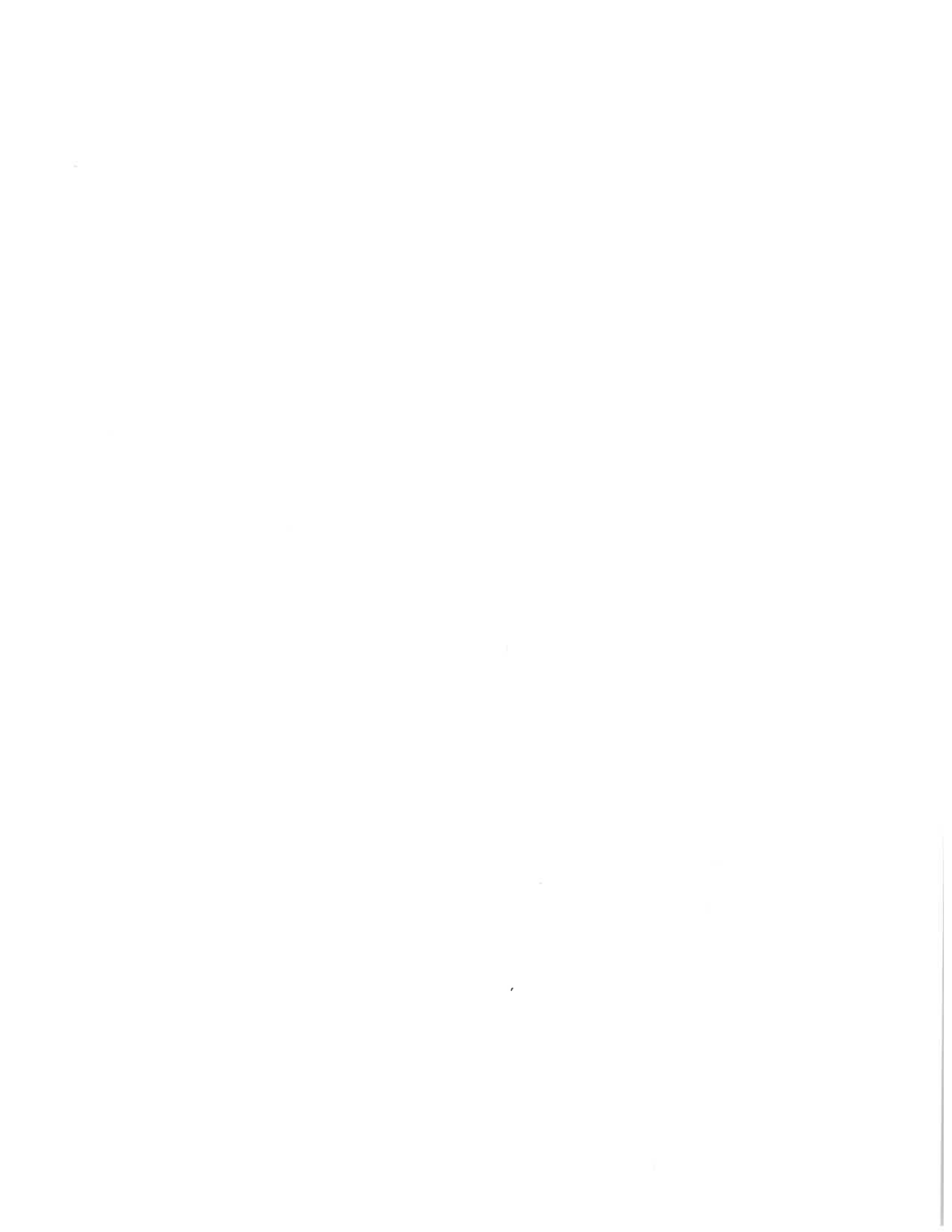
3.1 General: Select fill material shall be installed as shown on the Drawings and or at the direction of the ENGINEER.

3.2 Compaction: All select fill shall be compacted to within the range of one (1%) percentage point below to three (3%) percentage points above the optimum moisture content 95% of a Standard Proctor test.

3.3 Placement Control: To insure uniform placement and compaction, select fill material shall be placed in eight (8") inch maximum loose lifts and compacted as specified in Paragraph 3.2 above.

3.4 Method of Delivery: Any vehicle utilized for the delivery of select fill material shall be examined and approved by the ENGINEER prior to delivery. Select fill will require approved loading and hauling means and other requirements in conformance with Section 109.01 of the LDTOD Standard Specification for Roads and Bridges, 2016 Edition.

- END OF SECTION -



SECTION 02202REMOVAL OF STRUCTURES AND OBSTRUCTIONSPART 1 - GENERAL

1.1 Scope: This Section includes furnishing of all labor, materials, tools and equipment, and perform all operations necessary for demolition, abandonment and removal of those existing structures and other obstructions not designated or permitted to remain for construction as indicated on the Drawings and as directed by the ENGINEER.

1.2 Referenced Standard: Work shall conform to the following Section of the State of Louisiana, Department of Transportation and Development, "Louisiana Standard Specifications for Roads and Bridges", 2016 Edition, except as may be modified herein:

Section 202 - Removing or Relocating Structures and Obstructions

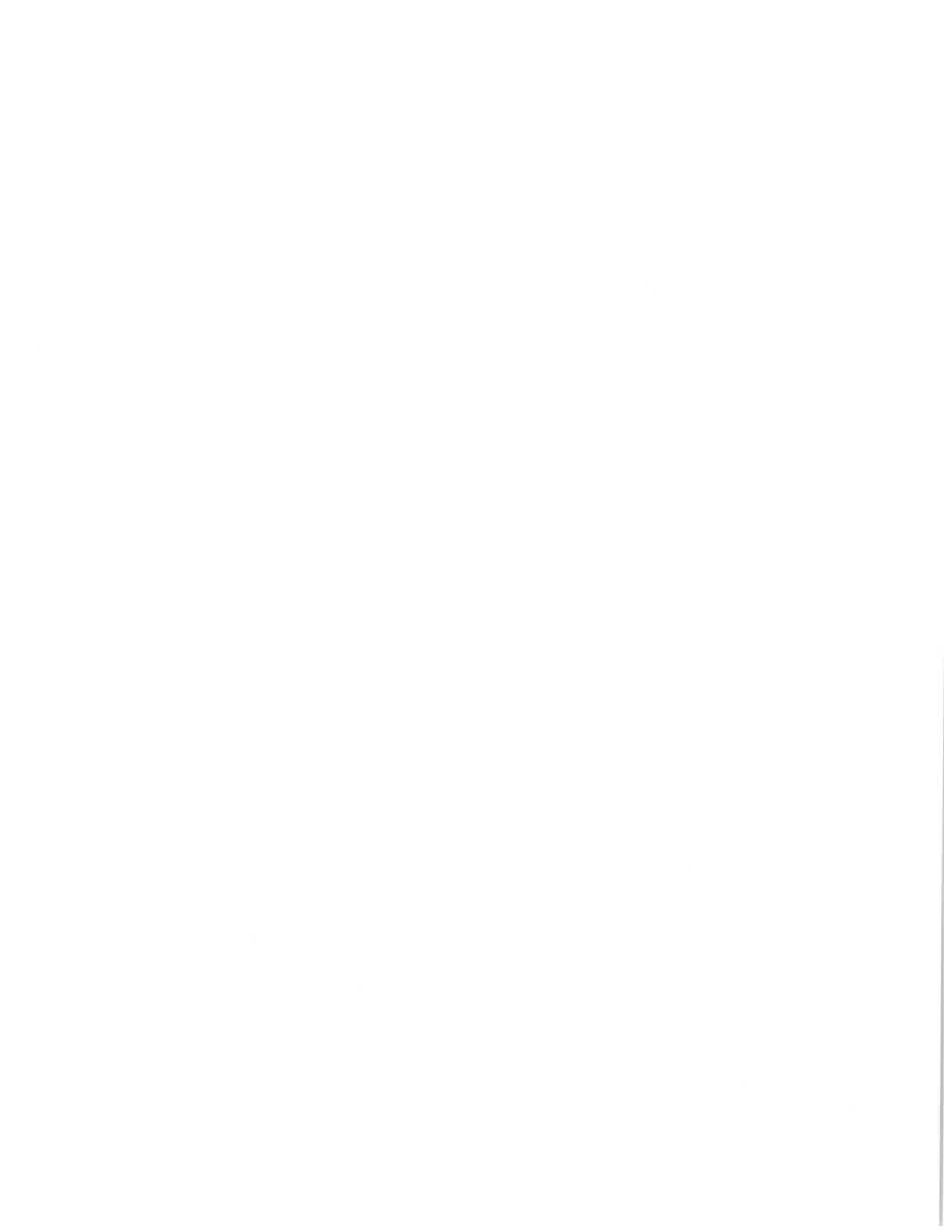
All references made therein to measurement and payment are hereby deleted.

PART 2 - PRODUCTS (NOT USED)PART 3 - EXECUTION

3.1 General: The CONTRACTOR shall remove, haul off and satisfactorily dispose of all structures and obstructions designated for demolition, etc. that would interfere with construction or are required to permit construction as designed. It shall include backfilling resulting trenches, holes, pits, etc. Debris or excess material shall be disposed of off the project site.

3.2 Material Difference in Conditions: If structures or obstructions are encountered which differ materially from those ordinarily encountered, said conditions shall be immediately reported to the ENGINEER and the scope of work determined and appropriate costs negotiated for a change order.

- END OF SECTION -



SECTION 02203EXCAVATION, EMBANKMENT AND BACKFILLPART 1 - GENERAL

1.1 Scope: This Section includes the work required to perform all excavation, embankment and backfill against structures, and filling, and grading as required to achieve the final site contours, to the lines, grades and locations shown on the Drawings and/or as directed by the ENGINEER as required to complete the work.

1.2 Referenced Standard: Work shall conform to the following Sections of the State of Louisiana, Department of Transportation and Development, "Louisiana Standard Specifications for Roads and Bridges", 2006 Edition, except as may be modified herein:

Section 203	-	Excavation and Embankment
Section 802	-	Structural Excavation, Backfill and Earth Retaining Systems

All references made therein to measurement and payment are deleted.

1.3 Applicable Publications: The publications listed below form a part of this Specification to the extent referenced. The publication may be referred to in the text by basic designation only:

A.	American Society for Testing and Materials	
	D 698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort
	D 1557	Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
	D 2487	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
	D 4318	Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

1.4 Submittals: Submit product data in accordance with provisions of Section 01340 - Shop Drawings, Samples and Project Data. Submittals of soil samples shall be provided to the ENGINEER. No borrow operations shall be permitted until soil tests have been completed and materials approved for use.

1.5 Quality Control: All soil used for embankment shall be classified in accordance with ASTM D 2487 and tested in accordance with Section 01410 - Testing Laboratory Services.

1.6 Definitions:

- A. Degree of Compaction: Refer to Section 02201 – Structural Fill Material.
- B. Unsatisfactory Materials: Unsatisfactory materials include materials classified in ASTM D 2487 as PT, OH, OL, ML, MH and any other materials deemed by ENGINEER as unsatisfactory.

PART 2 - PRODUCTS

- 2.1 Select Fill: Refer to Section 02201 – Select Fill Material.

PART 3 - EXECUTION

- 3.1 General: All excavation, embankment and backfill work shall be in accordance with the referenced Standard as modified herein.

3.2 Subgrade Preparation: The subgrade shall be proof rolled in the presence of the ENGINEER. Existing subgrade that ruts or deflects excessively under the moving proof load shall be undercut and replaced with “structural fill”. The subgrade shall then be scarified to a depth of eight (8”) inches before the fill is started. Scarification shall include forking, furrowing, or plowing. Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of twelve (12”) inches and compacted as specified for the adjacent fill. Material shall not be placed on surfaces that are wet, pumping, muddy or contain frost. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content at or above optimum that will readily facilitate obtaining the specified compaction with the equipment used. “Unsatisfactory Material” encountered in surfaces to receive fill or in excavated areas shall be removed and replaced with “structural fill”. When subgrades are less than the specified density, the ground surface shall be broken up to minimum depth of eight (8”) inches, pulverized, and compacted to the specified density. Approved compacted subgrades that are disturbed by the CONTRACTOR'S operations or adverse weather shall be scarified and compacted as specified herein to the required density prior to further construction thereon.

3.3 Muck Excavation: Muck excavation consists of the removal of water saturated soils, organic matter or other material not usable for foundation material. Materials which will decay or produce subsidence in the embankment, or materials containing decaying stumps, roots, logs, humus or other material are not satisfactory for use in the embankment. The ENGINEER will determine the material to be removed. Material which cannot be used shall be removed from the project site.

3.4 Excavation: Excavation work shall conform to the dimensions and elevations indicated on the Drawings. Excavations below indicated depths will not be permitted except to remove “Unsatisfactory Material”. Excavated material meeting the requirements of PART 2 - PRODUCTS may be placed in the corresponding section of the permanent work or shall be

separately stockpiled if it cannot be readily placed. Excavated material in excess of that required for the permanent work and all "Unsatisfactory Material" shall be properly disposed of off-site. "Unsatisfactory Material" encountered below the grades shown shall be removed as directed and replaced with "select fill".

3.5 Embankment: Embankment construction consists of constructing embankments, including preparation of areas on which they are to be placed. Prior to beginning excavation, grading or embankment operations in an area, all necessary clearing and grubbing in that area shall have been completed. Embankment material shall be placed in uniform layers not exceeding 8" of uncompacted thickness or 6" when hand operated compactors are used. Each layer shall be placed for the full width of embankment, brought to a uniform moisture content, and compacted by approved methods before the next layer is placed. Operations shall be conducted to prevent lamination between lifts. Laminations between lifts shall be corrected prior to placing additional lifts. Surfaces of excavated areas and embankments shall be smooth and uniform. Material outside construction limits shall not be disturbed. Excavated material shall become the property of the CONTRACTOR. Soils from excavation areas may be used, when approved by the ENGINEER in embankments or other finished sections. Surplus or unsatisfactory excavated material shall be disposed of by the CONTRACTOR. Excavation and rough grading shall be performed simultaneously, unless otherwise directed or permitted. Excavated material shall be placed sufficient to protect the integrity of the slope. The CONTRACTOR shall be responsible for the stability of embankments until final acceptance. Construction activities which may lead to subsequent embankment damage will not be permitted.

3.6 Backfilling: Backfilling consists of that work required to place fill to the lines and grades shown on the Drawings. Backfill shall be placed in horizontal layers not exceeding eight (8") inches in loose thickness, or six (6") inches when hand operated compactors are used. After placing, each layer shall be plowed, disked, or otherwise broken up, moistened or aerated as necessary, thoroughly mixed and compacted as specified. Backfilling shall not begin until construction below finish grade has been approved, underground utility systems have been inspected, tested and approved, forms removed, and the excavation cleaned of trash and debris. Backfill shall not be placed in wet areas. Heavy equipment for spreading and compacting backfill shall not be operated closer to new structural concrete foundation and or walls than a distance equal to the height of backfill above the top of the structures. The area remaining shall be compacted in layers not more than four (4") inches in compacted thickness with power driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around other work to avoid damage. Backfill shall not be placed against new structural concrete walls prior to seven (7) days after completion of the structures. As far as practicable, backfill shall be brought up evenly on each side of structures and sloped to drain away.

3.7 Compaction Requirements: Refer to Section 02201 – Select Fill Material. The subgrade shall be proof rolled in the presence of the ENGINEER. Approved compacted subgrades that are disturbed by the CONTRACTOR'S operations or adverse weather shall be scarified and compacted as specified herein to the required density prior to further construction thereon.

3.8 Grading:

A. Grading of filled and unfilled area shall be to the lines and grades indicated on the Drawings or as specified by the ENGINEER. Grading shall be performed in conjunction with all of the necessary clearing, grubbing, stripping, filling, and compacting operations to the satisfaction of the ENGINEER. Grading shall be performed to such lines and grades as may be necessary to allow for the addition of loam, if required, to the proposed finished grade.

B. Grading shall be done by bulldozer or other approved means. Areas adjacent to structures and other areas inaccessible to heavy grading equipment shall be graded by manual methods.

C. Final grading shall be performed in such manner as to provide proper drainage from the project site. Finished grades shall be pitched to drain away from structures completed under this contract as indicated on the Drawings or as directed by the ENGINEER. In no case shall drainage from the project site be so alert or controlled as to result in damage, or the potential for damage, to adjacent property or to any portion of the work executed under this contract from erosion or flooding.

D. Areas shall be constructed true to grade, shaped to drain, and shall be maintained free of trash and debris until final inspection has been completed and the work has been accepted.

3.9 Drainage and Dewatering:

A. Drainage: Surface water shall be directed away from excavation and construction sites so as to prevent erosion and undermining of foundations. Diversion ditches, dikes and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting operations at the site shall be continually and effectively drained.

B. Dewatering: Refer to Section 02530 - Dewatering.

3.10 Protection: Settlement or washing that occurs in graded, topsoiled, or backfilled areas prior to acceptance of the work shall be repaired and grades re-established to the required elevations and slopes.

- END OF SECTION -

SECTION 02221

TEST PITS

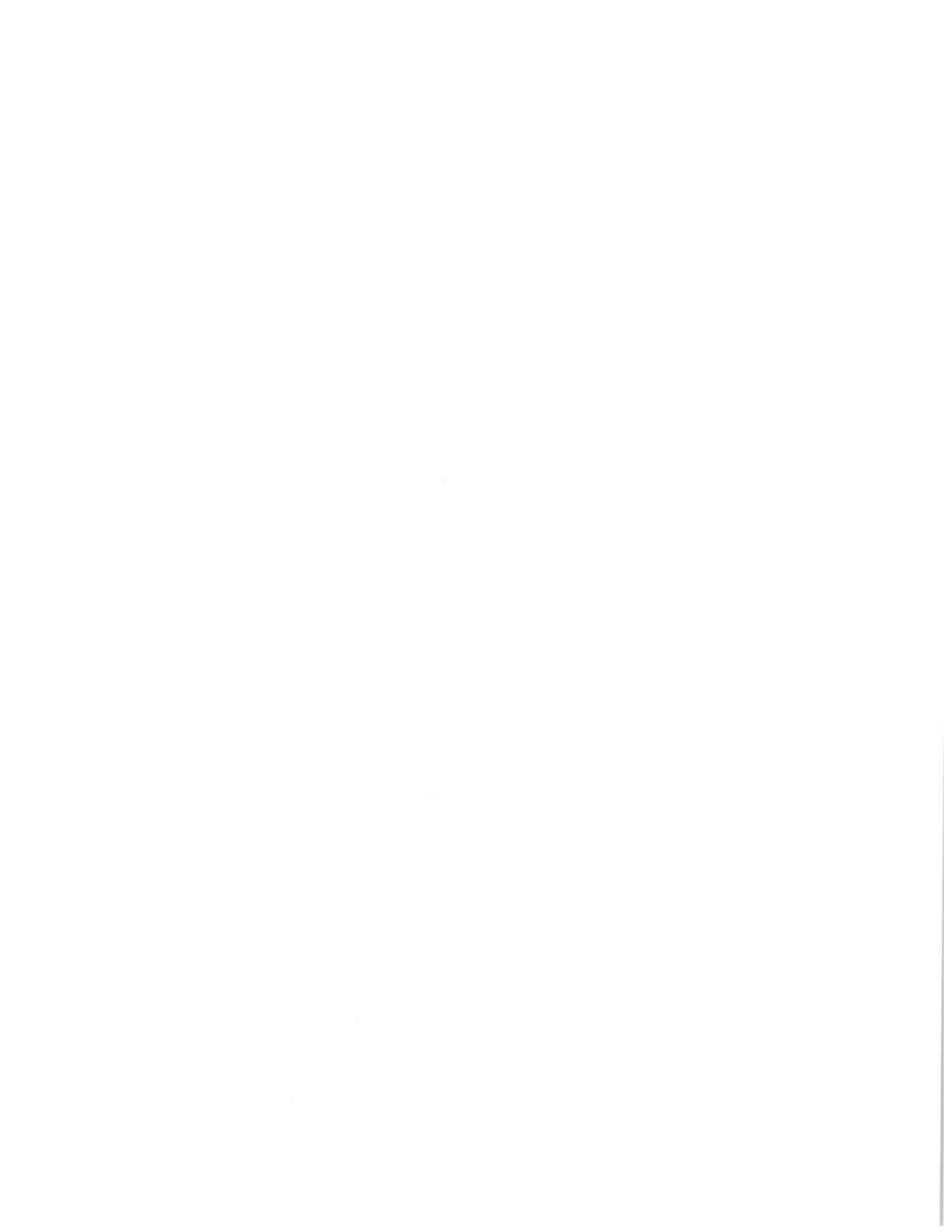
PART 1 - GENERAL

1.1 Scope: This Section covers all operations necessary to dig test pits in order to determine the exact location of existing underground utilities and facilities.

PART 2 - PRODUCTS - (NOT USED)PART 3 - EXECUTION

3.1 Test Pits: Test pits for the purpose of locating existing underground utilities and facilities shall be excavated in advance of the Work and backfilled by the CONTRACTOR. Test pits shall be backfilled immediately after their purpose has been satisfied and maintained in a manner satisfactory to the ENGINEER. Backfill shall comply with Section 02201 – Select Fill Material. For bid pricing purposes, a total of eight (8) test pits shall be excavated in an effort to secure the most accurate location of existing underground utilities and facilities.

- END OF SECTION -



SECTION 02401STONE SITE ACCESS DRIVEPART 1 - GENERAL

1.1 Scope: The CONTRACTOR shall furnish all labor, materials, tools and equipment and perform operations necessary for construction of stone site access drive in accordance with these Specifications and in conformity with the lines and grades as shown on the Drawings or established by the ENGINEER.

1.2 Reference Standard: Work shall conform to the following Section of the State of Louisiana, Department of Transportation and Development, "Louisiana Standard Specifications for Roads and Bridges", 2016 Edition, except as may be modified herein:

- Section 203 - Excavation and Embankment
- Section 401 - Aggregate Surface Course
- Section 1003 - Aggregates

All references made therein to measurement and payment are deleted.

1.3 Submittals: Submit product data in accordance with provisions of Section 01340 -Shop Drawings, Samples and Project Data.

PART 2 - PRODUCTS

2.1 Surface Course: Surface course shall be 2" of No. 57 stone over 4" of No. 610 Stone in conformance with Section 1003.03.1 of the referenced Standard.

2.2 Base Course: Base course shall be select fill material in conformance with Section 02201 – Select Fill Material a minimum of six (6") inches compacted thickness.

2.3 Geogrid: Tri-axial supported reinforced pre-punched polypropylene triangular gridded structural sheeting equivalent in strength (SN) to four (4") inches of the designed base course material exposed to an H-20 live load. The geogrid shall be manufactured from pre-punched polypropylene sheets oriented in three substantial equilateral directions resulting in "ribs" of high molecular orientation continuous through the mass. Geogrid sheets shall come in rolls of 13.1 feet x 246 feet long.

PART 3 - EXECUTION

3.1 General: All work related to this Section shall conform to applicable provisions of the referenced specification except as amended herein.

3.2 Base Course: The installation of the base course shall conform to the applicable subsections of the referenced Standard. Base course shall be placed in six (6") inch loose lifts. Compaction shall be in accordance with Paragraph 302.07.3 of the referenced Standard. Minimum compaction shall be 95% of standard proctor density within two (2%) percent optimum moisture content.

3.3 Surface Course: The installation of the surface course shall conform to the applicable subsections of the referenced Standard. The Contractor shall construct all surface course to the lines, depth and grades as shown on the Drawings. The surface course shall be placed, shaped and compacted in accordance with Section 401 - Aggregate Surface Course of the referenced Standard which requires the use of a pneumatic tire or steel wheel roller. The surface shall be tight and smooth.

- END OF SECTION -

SECTION 02530DEWATERINGPART 1 - GENERAL

1.1 Scope: This Section covers all work required to install and maintain drainage systems for handling groundwater and surface water encountered during construction of the project.

PART 2 - PRODUCTS (NOT USED)PART 3 - EXECUTION3.1 Dewatering:

A. The CONTRACTOR shall, at all times during construction, provide and maintain proper equipment and facilities to promptly remove and dispose of all water entering excavations and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition, until the fill, structure, or pipes to be built thereon or otherwise damaged by allowing water levels to return to natural elevations.

B. Dewatering shall at all times be conducted in such a manner as to preserve the natural undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.

C. The CONTRACTOR shall furnish all materials and equipment and perform all work required to install and maintain the drainage systems he proposes for handling groundwater and surface water encountered during construction of structures, pipelines, and compacted fills.

D. The established calendar day period for time of completion is intended to allow the CONTRACTOR to take advantage of the seasonal variations and groundwater levels during construction.

E. Any dewatering methods must meet the approval of the ENGINEER.

- END OF SECTION -

SECTION 02561WATER SERVICE AND APPURTENANCESPART 1 - GENERAL

1.1 Scope: This Section covers the installation of potable water service to the pump station as indicated on the Drawings and specified herein.

1.2 Applicable Publications: The publications listed below form a part of this specification to the extent referenced. The publications may be referred to in the text by basic designation only.

A. American Water Works Association:

C901 Polyethylene (PE) Pressure Pipe and Tubing, ½ inch through 3 inch, for Water Service

B. American Society for Testing and Materials:

D2737 Specification for Polyethylene (PE) Plastic Tubing

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 - Shop Drawings, Samples and Project Data.

1.4 Quality Assurance: All pipe and fittings shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the material to be furnished.

PART 2 - PRODUCTS

2.1 1" Polyethylene - PE Tubing: Water tubing shall be I.P.S. PE 4710, SDR 9 conforming to ASTM D2737 and approved by the National Sanitation Foundation for potable water use and meet AWWA C901 specifications. The PE tubing shall be rated for use with water at 73.4°F at a maximum working pressure of 200 psi. The PE water service tubing shall be Driscopipe 5100 - Ultra Line manufactured by Phillips Driscopipe, Inc., EndoPure as manufactured by Endot Industries, or approved equal.

2.2 Non-Corrosive Metallic Locator Wire: Non-Corrosive Metallic Locator Wire shall be Type TW, AWG #12 gage, insulated stranded copper wire.

2.3 Wire Splice Kits: Wire Splice Kits shall be direct bury type, 3M part No. 05407-09964, or approved equal.

2.4 Exposed Building Piping: All building water pipe and fittings for hose bibbs shall be ¾" Schedule 40 316 stainless steel N.P.T. All fittings shall conform to ANSI B16.3 Class 150. All threaded connection shall be made using approved high pressure water pipe thread tape.

2.5 Exposed Building Piping Valves: ¾" water valves shall be female x female NPT full port ¼ turn ball valves rated for 150 psig use, shall be 316 S.S. with S.S. working parts, shall be lead free and in conformance with NSF/ANSI 61.

2.6 ¾" R.P. Backflow Preventer: Backflow preventer within pump station ~~sites~~ shall be constructed with grade 65-45-12 ductile iron main valve body with a fusion epoxy coated internal and external factory finish in conformance with AWWA C550-90. The backflow preventer shall be bronze trimmed and have EPDM elastomer discs, stainless steel springs and shipped ready for installation. Backflow preventer manufacturer shall provide two (2) 316 S.S. ball valves. End connections shall be 150# ANSI B16.3 NPT. Backflow preventer shall be "WATTS" Series LF919, lead free, or approved equal.

PART 3 - EXECUTION

3.1 General: All pipe, valves, appurtenances and accessories shall be installed as indicated on the Drawings. Any deviations must be approved by the ENGINEER before installation.

3.2 Installation of Water Pipe and Fittings: All pipe and fittings shall be installed in strict accordance with the manufacturer's recommendations. Water pipe installation shall conform to ANSI/AWWA C600 pipe specifications.

3.3 Depth of Cover and Clearance:

A. The water service pipe (tubing) shall be laid so as to have a minimum of two (2) feet of earth cover. Where required by site conditions or directed by the ENGINEER, the CONTRACTOR shall provide for extra depth burial at no cost to the OWNER.

B. The CONTRACTOR shall install all water pipe and tubing as to maintain a minimum horizontal distance of six (6) feet from all sewer lines and minimum vertical distance of eighteen (18) inches from all sewer lines. All distances shall be measured from the outside diameter of each pipe.

3.4 Disinfection:

A. General:

1. The CONTRACTOR shall assist in the collection of samples required for State Department of Health and Hospitals approval of the completed system by providing acceptable sampling taps and temporary line flushing assemblies, as required, and suitable for satisfactory chlorination and flushing of the new service line.

2. Upon receipt of notice of an acceptable bacteriological test from the State Department of Health and Hospitals, the chlorine sampling taps and any temporary line flushing assemblies shall be removed.

3. The CONTRACTOR will be responsible for the successful disinfection of services. The CONTRACTOR shall assure that water shall not be furnished for

consumer's use until water samples collected and analyzed by the local Health Department show the water to be free of coliform bacteria.

B. Disinfection Procedures: Disinfection shall be accomplished by use of calcium or sodium hypochlorite and water mixture.

C. Point of Application: The preferred point of application of the chlorinating agent is at the beginning of the pipeline extension or any valved section of it and through a corporation stop inserted in the top of the newly laid pipe. The water injector for delivering the chlorine-bearing water into the pipe should be supplied from a tap on the pressure side of the gate valve controlling the flow into the pipeline extension.

D. Rate of Application: Water from the existing distribution system or other source of supply shall be controlled so as to flow slowly into the newly laid pipeline during the application of chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe shall produce at least 50 ppm.

E. Preventing Reverse Flow: Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Check valves may be used if desired. The CONTRACTOR shall insure that a positive flow is developed in the direction of the new line before chlorinating. The CONTRACTOR shall insure that chlorine solution is not allowed to backfeed into the existing system thereby potentially creating a health and safety hazard for system users.

F. Retention Period: Treated water shall be retained in the pipe long enough to destroy a non-spore-forming bacteria. This period should be at least six (6) hours and preferably longer as may be directed.

G. Residual Required: After the chlorine treated water has been retained for the required time, the chlorine residual at pipe extremities and at other representative points shall be at least 5 ppm.

H. Repetition of Procedure: Should the initial treatment fail to result in the conditions specified above, the original chlorination procedure shall be repeated until a 5 ppm residual is obtained.

- END OF SECTION -

SECTION 02601PORTLAND CEMENT CONCRETE PAVEMENTPART 1 - GENERAL

1.1 Scope: This Section covers all operations necessary to construct new Portland Cement concrete pavement within the areas shown on the Drawings.

1.2 Reference Standard: Work shall conform to the following Section of the State of Louisiana, Department of Transportation and Development, "Louisiana Standard Specifications for Roads and Bridges", 2006 Edition, except as may be modified herein:

Section 601 - Portland Cement Concrete Pavement

Section 901 - Portland Cement Concrete

- A. American Concrete Institute (ACI) latest edition
1. 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
 2. 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete
 3. 305R Hot Weather Concreting
 4. 306R Standard Specification for Cold Weather Concreting
 3. 308 Standard Practice for Curing Concrete
- B. American Society for Testing and Materials (ASTM) latest edition
1. A185 Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
 2. A615 Deformed and Plain Billet-Steel for Concrete Reinforcement
 3. C33 Concrete Aggregates
 5. C94 Ready-Mixed Concrete
 6. C143 Method for Slump of Hydraulic Cement Concrete
 7. C150 Portland Cement
 8. C171 Sheet Material for Curing Concrete
 9. C231 Air-Content of Freshly Mixed Concrete by the Pressure Method
 10. C260 Air-Entraining Admixtures for Concrete
 11. C309 Liquid Membrane-Forming Compounds for Curing Concrete
 12. C494 Chemical Admixtures for Concrete
 13. C920 Standard Specification for Elastomeric Joint Sealants
 14. D994 Preformed Expansion Joint Filler for Concrete (Bituminous)
 15. D1751 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
 16. D2628 Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements

All references made therein to measurement and payment are deleted.

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples And Project Data.

1.4 Quality Assurance:

- A. Establish and maintain required lines and elevations.
- B. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Owner.

PART 2 - PRODUCTS

2.1 General: Materials shall conform to applicable provisions of Sections or subsections referred to in the Reference Standard except as specified otherwise herein.

2.2 Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. Coat forms with nonstaining type of coating that will not discolor or deface surface of concrete.

2.3 Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 60.

2.4 Portland Cement Concrete: Portland Cement concrete shall be Structural Class "A" as specified in Section 03300 - Cast-in-Place Concrete.

2.5 Joint Fillers:

A. Isolation and Butt Joints: Closed cell polypropylene joint filler (1/2" thickness) with removable strip to allow for sealant reservoir.

B. Expansion Joints: Redwood (3/4" thickness) with removable strip to allow for sealant reservoir.

2.6 Joint Sealants: Sealant shall be silicone or polyurethane. It shall be cold applied, single component, pourable and self-leveling. The sealant shall meet the performance requirements of ASTM C920 and Federal Specifications TT-S-00230C.

2.7 Aggregate: Shall conform to ASTM C33.

2.8 Water: Shall be clean and potable.

2.9 Dowel Bars: Shall conform to ASTM A615, grade 60, and plain steel bars.

2.10 Air Entraining Mixture: Shall conform to ASTM C260 (Sika AER by Sika Corporation, Air Mix by the Euclid Chemical Corporation or approved equal).

2.11 Curing Compound: This material shall conform to AASHTO Designation: M148 and be on the LDOTD Qualified Products list. The curing compound shall be white pigmented and conform to Subsection 1011.01.

2.12 Joint Backer Rods: Shall be CCEVA Rod 100 by E-Poxy Industrials, Inc., Sealtight BACKER ROPE by W.R. Meadows, Inc; Best Materials; or approved equal.

PART 3 - EXECUTION

3.1 General: All work related to this Section shall conform to Section 601 of the Reference Standard, except as revised herein.

3.2 Preparation: Base course and subgrade shall have met compaction requirements prior to beginning paving operations. Proofroll prepared base or subgrade material surface to check for unstable areas. Paving work shall begin only after unsuitable areas have been corrected and are ready to receive paving. Remove loose material from compacted base or subgrade material surface to produce firm, smooth surface immediately before placing concrete.

3.3 Form Construction:

- A. Set forms to required grades and lines, rigidly braced and secured.
- B. Install sufficient quantity of forms to allow continuance of work and so that forms remain in place minimum of 24 hours after concrete placement.
- C. Check completed formwork for grade and alignment to following tolerances:
 - 1. Top of forms not more than 1/8-inch in 10'-0"
 - 2. Vertical face on longitudinal axis, not more than 1/4-inch in 10'-0"
- D. Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage.

3.4 Concrete Placement:

- A. Concrete may be mixed and placed when the air temperature in the shade and away from artificial heat is a minimum of 35 degrees F and rising. Hot and cold weather concreting shall be in accordance with ACI 305R and 306R, respectively.
- B. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Concrete shall not be placed around manholes or other structures until they are at required finish elevation and alignment.
- C. Place concrete using methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.

D. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2 hour, place construction joint.

3.5 Finish: Finishing of concrete by either machine or hand may be used.

A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10'-0" straightedge. Distribute concrete as required to remove surface irregularities and refloat repaired areas to provide continuous smooth finish.

B. Work edges of slabs and formed joints with edging tool, rounding edge to 1/2-inch radius. Eliminate tool marks on concrete surface. After completion of floating and trowelling, when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:

1. Inclined Slab Surfaces: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic so as to produce regular corrugations not over 1/16 of an inch deep.

2. Paving: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic so as to produce regular corrugations not over 1/16 of an inch deep.

3. Tine finish: May be utilized at each of the entrance drives (slope > 3%) at the OWNER's discretion and shall provide for a 3/8 inch minimum spacing and 1 1/2 inch maximum spacing. Grooves produced in concrete shall be 3/16 inch in depth with a minimum depth of 1/8 inch.

C. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Owner.

3.6 Reinforcement and Dowels: Structural or fabric reinforcement will be supported by chairs. All structural reinforcement shall be Grade 60. Fasten reinforcing bars and dowels accurately and securely in place with suitable supports and ties. Remove from reinforcement all dirt, oil, loose mill scale, rust, and other substances that will prevent proper bonding of the concrete to the reinforcement.

3.7 Joints: Expansion, longitudinal and dummy joints shall be constructed as detailed on the Drawings. If metal keyway forms are used to construct the longitudinal and transverse joints, the keyway form should be removed prior to installation of the adjacent panel pour.

3.8 Joint Sealing: Joints shall be sealed with silicone or polyurethane sealant in accordance with the manufacturer's recommendations.

3.9 Curing: Curing and protection of the concrete shall be in accordance with Section 601.10 of the Referenced Standard.

3.10 Cleaning and Adjusting:

- A. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.
- B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement.

END OF SECTION

SECTION 02705CHAIN LINK FENCE AND GATESPART 1- GENERAL

1.1 Scope: This section covers the furnishings of all labor, materials, tools and equipment and the performance of all operations necessary to install new fencing as indicated on the Drawings as specified herein, and or as directed by the ENGINEER.

1.2 Submittals: Submit product data in accordance with provisions of Section 01340 - Shop Drawings, Samples and Project Data.

A. Product Data: Provide product data in the form of manufacturer's technical data, specifications, and installation instructions for fence posts (line, end, corner, pull, gate, etc.) fabric, gates, barbed wire and or tape, extension arms, gate hardware and accessories.

1.3 Applicable Publications: The publications listed below form a part of this Specification to the extent referenced. The publications may be referred to in the text by designation only.

American Society for Testing and Materials (ASTM) Publications:

A90 Test Method for Weight (Mass) of coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.

A121 Specifications for Zinc-Coated (Galvanized) Steel Barbed Wire.

A176 Specifications for Stainless and Heat-Resisting Chromium Steel Plate, Sheet and Strip.

A478 Specification for Chromium Nickel Stainless and Heat Resisting Steel Weaving and Knitting Wire.

A580 Specification for Stainless and Heat-Resisting Wire.

A585 Specification for Aluminum Coated Steel Barbed Wire.

A764 Specification for Steel Wire, Carbon, Drawn Galvanized and Galvanized at Size for Mechanical Springs.

A817 Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric.

A824 Specification for Metallic-Coated Steel Marcell Tension Wire for Use with Chain-Link Fence.

F567 Practice for Installation of Chain-Link Fence.

F626 Specification for Fence Fittings.

F669 Specifications for Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence.

F900 Specifications for Industrial and Commercial Swing Gates.

F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

F1234 Specification for Protective Coating on Steel Framework for Fences.

1.4 Quality Assurance and Qualifications:

A. Installer Qualifications: Installer shall have at least three (3) years experience and have completed at least five (5) years chain link fence projects with same material and of similar scope to that indicated for this Project with a successful construction record of in-service performance.

B. Single Source Responsibility: Obtain chain link fences and gates, including accessories, fittings and fastenings, from a single source.

PART 2- PRODUCTS

2.1 Steel Chain-Link Fence Fabric: Steel chain link fence fabric shall be fabricated in one-piece widths for fencing twelve (12) feet and less in height to comply with Chain Link Fence Manufacturers Institute (CLFMI) "Products Manual". The fabric shall be 9 gage or 6 gage, as indicated on the Drawings, with 2-inch diamond mesh pattern and twisted finish on top and bottom. The fabric coating shall meet the requirements of ASTM A817, Type 2, Class 1 zinc coating. The zinc coating shall be applied after weaving.

2.2 Round Posts and Rails: Round posts and rails shall be standard weight (schedule 40) galvanized-steel pipe conforming to ASTM F 1083, and to the heavy industrial requirements of ASTM F 669, Group IA, with minimum yield strength of 25,000 psi, not less than 1.8 oz. of zinc per sq. ft. The posts shall have Type A coating inside and outside according to ASTM F 1233, as determined by ASTM A 90, and weights per foot as follows:

<u>Actual OD</u>	<u>Weight (lb/ft)</u>	<u>NPS Size</u>
1.315	1.68	1
1.660	2.27	1-1/4
1.900	2.72	1-1/2
2.375	3.65	2
2.875	5.79	2-1/2
3.500	7.58	3
4.000	9.11	3-1/2
4.50	10.79	4
6.625	18.97	6
8.625	28.55	8

A. Top Rail: Top rails shall be 1.660 inch OD Type I or II steel pipe. Rails shall be manufacturer's longest lengths (17 to 21 feet) with swaged-end or expansion-type coupling, approximately 6 inches long for joining. Provide rail ends or other means for attaching top rail securely to each post.

B. Line, End, Corner and Pull Posts: Line post shall be 2.875 inch OD Type I or II steel pipe. End, corner and pull posts shall be 4.000 inch OD Type I or II steel pipe as shown on the Drawings.

C. Swing Gate Posts: Swing gate posts to support a single gate leaf shall meet the requirements of ASTM F 900. For gate leaf widths of eight (8') feet and under, swing gate posts shall be 4.000 inch OD pipe weighting at least 9.11 lb. per foot.

D. Bottom Rail: Bottom rails shall be 1.660 inch OD Type I or II steel pipe. Provide manufacturer's standard galvanized steel, cast-iron or cast aluminum cap for each end.

2.3 Fittings and Accessories:

A. Material: Fittings and accessories shall meet the requirements of ASTM F 626. Unless specified otherwise, hot-dip galvanized pressed steel or cast-iron fence fittings and accessories with at least 1.2 oz. of zinc per square foot as determined by ASTM A 90 shall be used.

B. Tension or Stretcher Bars: Tension or stretcher bars shall be hot-dip galvanized steel with a minimum length 2 inches less than the full height of fabric, a minimum cross section of 3/16 inch by 3/4 inch, and a minimum of 1.2 oz. of zinc coating per square foot. Provided one bar for each gate and end post, and two for each corner and pull post.

C. Tension Wire: Tension wire shall be 7 gage metallic-coated steel marcelled tension wire conforming to ASTM A 824 with finish to match fabric. The wire shall have a Type II, Class 1 zinc coating, conforming to ASTM A 90, with a minimum coating weight of 0.80 oz. per square foot of uncoated wire.

D. Hog Rings: Hog rings shall be 12 1/2 gage galvanized steel rings.

2.4 Barbed Wire and Supporting Arms:

A. Steel Barbed Wire: Steel barbed wire shall be three-strand, 12 gage steel wire with 14 gage, four-point barbs spaced not more than 5 inches apart. The wire shall have a galvanized finish complying with ASTM A 121. Wire shall be chain link fence grade with Class 3 coating of not less than 0.8 oz. of zinc per square foot as determined by ASTM A 90.

B. Supporting Arms: Barbed wire supporting arms shall conform to ASTM F 626. The metal and finish shall match that of the fence framework. Provisions for anchorage to posts and attaching three (3) rows of barbed wire to each arm shall be provided. Supporting arms shall be integral with post top weather cap. Supporting arms shall be capable of withstanding 250lb. minimum download pull at the outermost end.

2.5 Fence Gate:

A. General: Fabricate gates from same material and finish as fence framework. Fabric shall be the same as for fence unless otherwise indicated. Provided horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members a maximum of 8 feet apart unless otherwise indicated. Secure fabric at vertical edges with tension bars and bands and to top and bottom of frame with hog rings. Extend vertical end members of gate frames 12 inches above horizontal top member and prepare as required to install barbed wire and or barbed tape.

B. Swing Gates: Swing gates shall comply with ASTM F 900. Perimeter frames for swing gates up to 8 feet wide and over 6 feet high shall be fabricated of 1.90-inch minimum OD Type I or II steel pipe.

C. Gate Hardware: Provide galvanized hardware and accessories for each gate as indicated on the Drawings.

2.6 Concrete: Refer to Section 03300- Cast-In-Place Concrete.

2.7 Ground Rods: Ground rods shall be 5/8" nominal diameter x 8' long Cooperweld rod, Burndy type GAR, or approved equal.

PART 3- EXECUTION

3.1 Installation:

A. General: Install fence to comply with ASTM F 567. Do not begin installation and erection before final grade is completed.

B. Excavation: Drill or hand-excavate (using post-hole digger) holes for posts to diameters and spacing indicated, in firm, undisturbed or compacted soil.

C. Setting Posts: Space posts a maximum of 8 feet apart. Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operations.

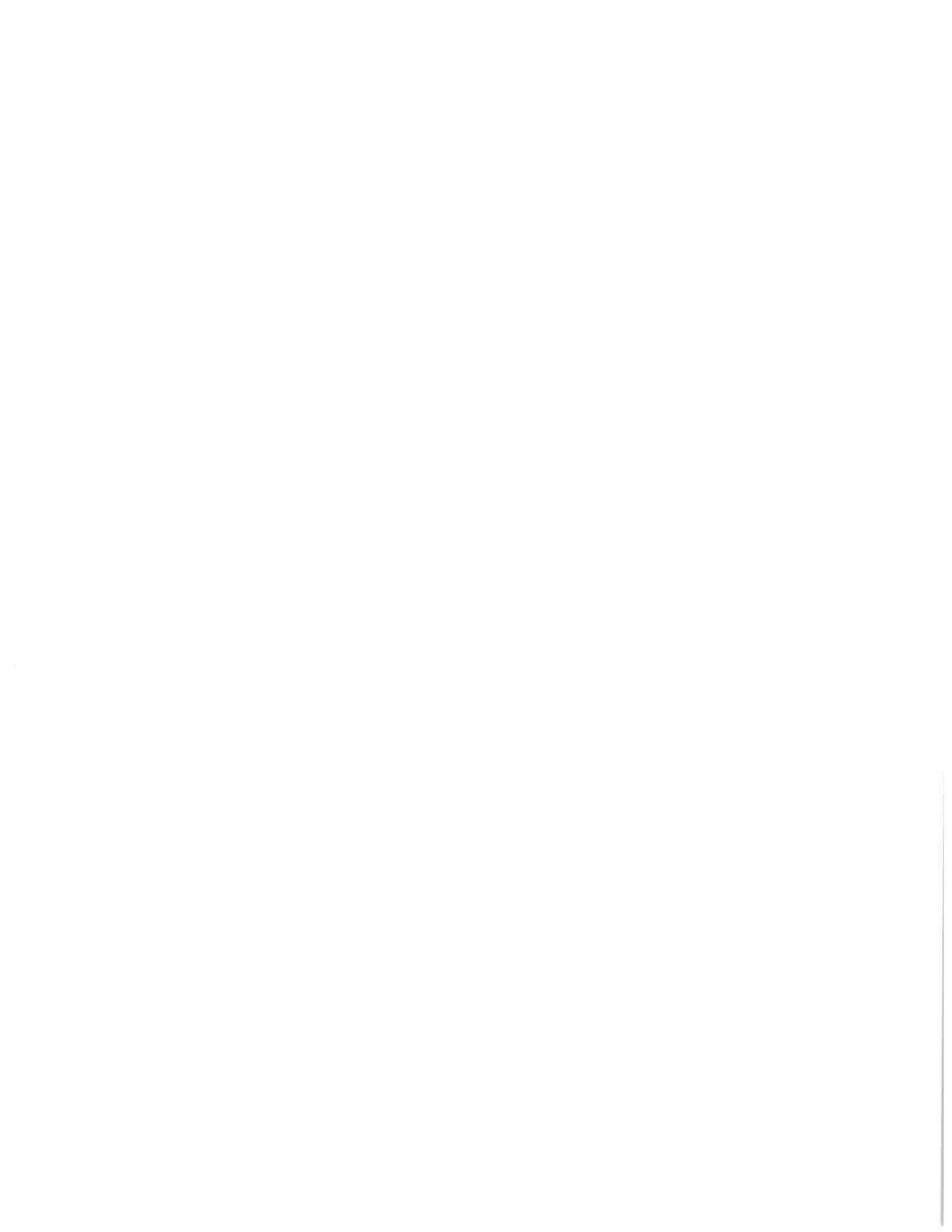
D. Top Rails: Run rail continuously between line posts. Terminating into rail end attached to posts or post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.

E. Fabric: Leave approximately 2 inches between finish grade and bottom selvage. Pull fabric taut and tie to post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.

F. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not over 12 inches on center.

- G. Hog Rings: Chain link fence fabric shall be securely attached to tension wire or rails with 12 ½ gage galvanized steel hog rings. Hog rings shall be spaced approximately 12 inches on center.
- H. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts for added security.
- I. Barbed Wire: Pull wire taut and install securely to extension arms and secure to end post or terminal arms according to manufacturer's instructions.
- J. Gates: Install gates according to manufacturer's instructions. Install gates plumb, level, and secure for full opening without interference. Install ground-sets items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary. After repeated operation of completed installation equivalent to 3 days use by normal traffic, readjust gates for optimum operating condition and safety. Lubricate operating equipment and clean exposed surfaces.
- K. Grounding Devices: Grounding devices shall be installed at a maximum of two hundred fifty (250') feet on centers, at overhead utility crossings, and or where directed by the ENGINEER along the new chain link fence.

END OF SECTION



SECTION 02706SIDEWALKS AND INCIDENTAL P.C. CONCRETEPART 1 - GENERAL

1.1 Scope: This section covers the requirements for portland cement concrete sidewalk and incidental pavements in accordance with these Specification and conformity with the lines and grades as shown on the Drawings or established by the ENGINEER.

1.2 Submittals: Submit product data in accordance with provisions of Section 01340 -Shop Drawings, Samples and Project Data.

1.3 Applicable Publication: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American Society for Testing and Material (ASTM) Publications:

D994 Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)

B. American Association of State Highway and Transportation Officials (AASHTO) Publication:

M148 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

1.4 Referenced Standard: Conform to the following sections of the State of Louisiana, Department of Transportation and Development, "Standard Specifications for Roads and Bridges", 2016 Edition, except as modified herein:

Section 706 - Concrete Walks, Drives, and Incidental Paving

Section 901 - Portland Cement Concrete

All references made therein to measurement and payment are deleted.

PART 2 - PRODUCTS

2.1 Portland Cement Concrete: This material shall be equal to that as designated as Class M in Section 901 of the referenced Standard with a minimum average compressive strength at 28 days of 3,000 psi.

2.2 Curing Compound: This material shall conform to AASHTO Designation M148 and be on the LDOTD Qualified Products list. The curing compound shall be white pigmented.

2.3 Joint Material: Joint material shall be either bituminous type or wood. Bituminous type shall consist of asphalt and cellular fibers and conform to ASTM Designation D1751. The bituminous type shall be "Seal Tight" Fiber Expansion Joint Filler as manufactured by W.R. Meadows of Elgin, Illinois, (800) 342-5976. Wood type shall be clear heart redwood.

PART 3 - EXECUTION

3.1 General: Sidewalks and incidental paving shall be constructed by the CONTRACTOR in the best workmanlike manner. The underlying subgrade, as well as the finish surface, shall conform to the requirements of these Specifications and of the Drawings. Sidewalks and incidental paving shall be constructed on compacted subgrade. Subgrade shall be compacted as specified in Section 02203 – Excavation, Embankment and Backfill.

3.2 Protection of Adjacent Surfaces: Buildings or structures directly adjacent to concrete work shall be protected during all phases of construction. Protection methods shall include, but not be limited to barricades or padding to prevent building damage by all construction equipment and visqueen plastics or heavy canvas secured to the building at a minimum height of three (3') feet to prevent staining or concrete spatter of building surfaces. All protection methods shall be approved by the ENGINEER prior to the start of construction.

3.3 Portland Cement Concrete Sidewalks and Incidental Paving: This work shall conform to Section 706- "Concrete Walks, Drives and Incidental Paving" of the Referenced Standard. All work related to this Section shall conform to the applicable provisions contained in the Referenced Standard, except as revised herein.

3.4 Finishing: Finishing concrete by either machine or hand may be used. Pavement surface shall be finished with a broom finish conforming to subsection 706.03.4 of the Referenced Standard.

3.5 Joints: Expansion, longitudinal and dummy joints shall be constructed as detailed on the Drawings.

3.6 Curing Compound: All pavement shall receive white pigmented spray sealant curing compound upon completion of finish work.

3.7 Backfill and Compaction: Refer to Section 02203 - Excavation, Embankment and Backfill.

- END OF SECTION -

SECTION 02717EROSION CONTROL AND SOIL STABILIZATIONPART 1- GENERAL

1.1 Scope: This Section covers the preparation and implementation of temporary and permanent erosion controls, slope protection systems, etc., to ensure containment of sediment and the installation of temporary and final vegetation, as specified herein and/or as directed by the ENGINEER.

1.2 Environmental Requirements: Protect adjacent properties, prevent soil and sediment erosion and minimize water quality degradation in receiving waters throughout the life of the contract.

1.3 Referenced Standard: State of Louisiana, Department of Transportation and Development, Louisiana Standard Specifications for Roads and Bridges, 2016 Edition.

Section 204	-	Temporary Erosion Control
Section 715	-	Topsoil
Section 717	-	Seeding
Section 718	-	Fertilizer and Agricultural Lime
Section 720	-	Erosion Control Systems

(All references made therein to measurement and payment are deleted).

1.4 Submittals: Submit product data in accordance with provisions of Section 01340 - Shop Drawings, Samples and Project Data.

PART 2 - PRODUCTS

2.1 Topsoil: Available on-site topsoil is defined as non plastic silty loam located in the first zero to four (0" - 4") inches of the natural surface, having a pH of 5.9 to 6.6 and an organic matter content greater than two percent (2%) by weight. Generally, the upper part of the soil that is richest in organic matter is most valuable. Topsoil shall be free of debris, noxious weeds, toxic substances, muck, and rocks one half (1/2") inch and larger, clay, debris and any other undesirable matter that would be detrimental to the intended use of the topsoil for this project.

2.2 Silt Fence: Silt fence for siltation control shall be LDOTD Type "F" filter fabric. Silt fence stakes shall be a minimum of 60 inches in length and shall be 2-inch x 2-inch hard wood stakes driven 1'-6' into ground. Fence mesh shall be 14 ga. standard woven live stock wire with 6 inches x 6 inch spacing.

2.3 Seed: Grass shall be an approved quick-growing species suitable to the area, providing a temporary cover, which will not compete with permanent grasses. Rye grass is the only acceptable grass for winter cover. Comply with Section 717 and Subsection 1018.18 of the referenced Standard.

- 2.4 Fertilizer: Comply with Section 718 and sub section 1018.16.
- 2.5 Agricultural Lime: Comply with Section 718 and sub section 1018.17 of the referenced Standard.
- 2.6 Watering: Maintain continuous watering as required to establish temporary and permanent growth. Comply with sub section 717.07 of the referenced Standard.
- 2.7 Permanent Vegetative Cover: All areas disturbed due to construction shall receive permanent vegetation in addition to the temporary measures required herein. Seeding, fertilization and agricultural lime and or soil amendments shall conform to this Section.

PART 3 - EXECUTION

3.1 Erosion Control:

A. General: Erosion and sedimentation control including establishment of temporary and permanent vegetative cover by means as specified herein, or as directed by the ENGINEER and shall be carried on and maintained continually throughout the Construction Contract. Install, implement, and maintain erosion control in conformance with applicable Sections of the referenced Standard. CONTRACTOR shall maintain sediment control at all times and use his best practical means to protect the public and himself and or newly installed facilities. All non paved areas disturbed due to construction shall be seeded, fertilized and watered daily.

B. Erosion Control and Slope Protection Implementation:

1. Place erosion control systems in accordance with Section 720 of the referenced Standard and as may be dictated by site conditions in order to maintain the intent of the Specifications and Permits at no additional cost to OWNER.
2. Deficiencies or changes to erosion control and soil stabilization shall be implemented as site conditions change conforming to Section 204 of the referenced Standard.
3. OWNER has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct CONTRACTOR to provide immediate permanent or temporary pollution and sedimentation control measures at no additional cost to the OWNER.
4. Maintain temporary erosion control systems as directed by OWNER or governing authorities to control siltation during life of contract. CONTRACTOR shall respond to maintenance or additional work ordered by OWNER or governing authorities within 24 hours or sooner if required at no additional cost to the OWNER.

5. CONTRACTOR will be required to incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls.

6. Seed and mulch temporary and permanent work areas as excavation proceeds to extent considered desirable and practical.

7. Slopes that erode easily or that will not be graded for a period of 7 days or more shall be temporarily seeded as work progresses with wheat, rye, or oats application at no additional cost to the OWNER.

C. Clean-up: All temporary measures, not directed by the ENGINEER to remain, shall be removed and disposed of in an environmentally sound manner. All areas re-disturbed due to clean up shall receive permanent measures as specified herein.

3.2 Topsoil:

A. Spreading Area Priority: Topsoil shall be re spread in the following priority areas, beginning with the highest priority area; 1. Ditch embankment slopes beginning upstream and working downstream beginning at the top of the embankment; 2. Swale slopes beginning upstream and working downstream; 3. Gentle slopes; 4. Lower tier embankments; 5. Remaining areas.

B. Spreading Thickness: Topsoil shall be re spread not less than four inches (4") thick. The thickness specified herein is compacted thicknesses.

C. Stripping: Strip topsoil from those areas that will be disturbed by clearing, excavation and filling operations. The entire site shall NOT be stripped at once. Stripping shall progress as earthwork demands. Stripping depths varies but is anticipated to be four (4") inches thick over the site. CONTRACTOR shall be responsible for determining the depth of stripping.

D. Stockpiling: Topsoil for re-use shall be stockpiled in areas to be determined by the CONTRACTOR. Generally, re-spreading is easier and more economical when topsoil is stock-piled in small piles near the area(s) where it will be re-used. Stockpiles shall not exceed slopes of 2: 1 and shall not be higher than five feet (5') to prevent compaction. Stockpiles shall contain similar type soils. Do not mix topsoils from different areas where they are to be returned.

E. Stockpile Maintenance: Protect topsoil stockpiles by temporarily seeding as soon as possible and in NO case any later than fifteen (15) days after the formation of the stockpile. If stockpiles are to remain unused for a period greater than three (3) months they shall be permanently stabilized with appropriate vegetation to control erosion, contamination and weeds. All Stockpiles shall be protected with silt fences regardless of storage time.

F. Installation: The top six inches (6") of the sub grade or area to receive topsoil shall have a pH of 5.1-7.1 to support adequate vegetation. CONTRACTOR shall provide soil amendments in conformance with this Section. This is a requirement for all areas dis-

turbed due to construction whether the site yields sufficient quantities of topsoil or not. In general, any areas requiring topsoil and seeding shall be prepared accordingly. Once the area meets the aforementioned requirements and immediately prior to spreading the topsoil, loosen the sub grade a minimum of six inches (6") by disking and/or scarifying to ensure bonding of the prepared sub grade and topsoil. Spread the topsoil to the thicknesses specified herein. Compact the topsoil enough to ensure good contact with the prepared sub grade, but avoid excessive compaction as it increases run off and inhibits germinations. Do not install topsoil in areas that are wet, muddy, frozen, compacted and/or dried hard. Lightly disk immediately prior to seeding.

- END OF SECTION -

SECTION 02726

BEDDING MATERIAL

PART 1 – GENERAL

1.1 Scope: This Section covers all operations necessary to provide bedding or foundation material for all structures and or appurtenances, as shown on the DRAWINGS, as specified herein and or as directed by the ENGINEER, to provide a stable working table.

1.2 Reference Standard: Work shall conform to the following Section of the State of Louisiana, Department of Transportation and Development, "Louisiana Standard Specifications for Roads and Bridges", 2016 Edition, except as may be modified herein:

Section 1003 – Aggregates

(References made to Measurement and Payment are hereby deleted)

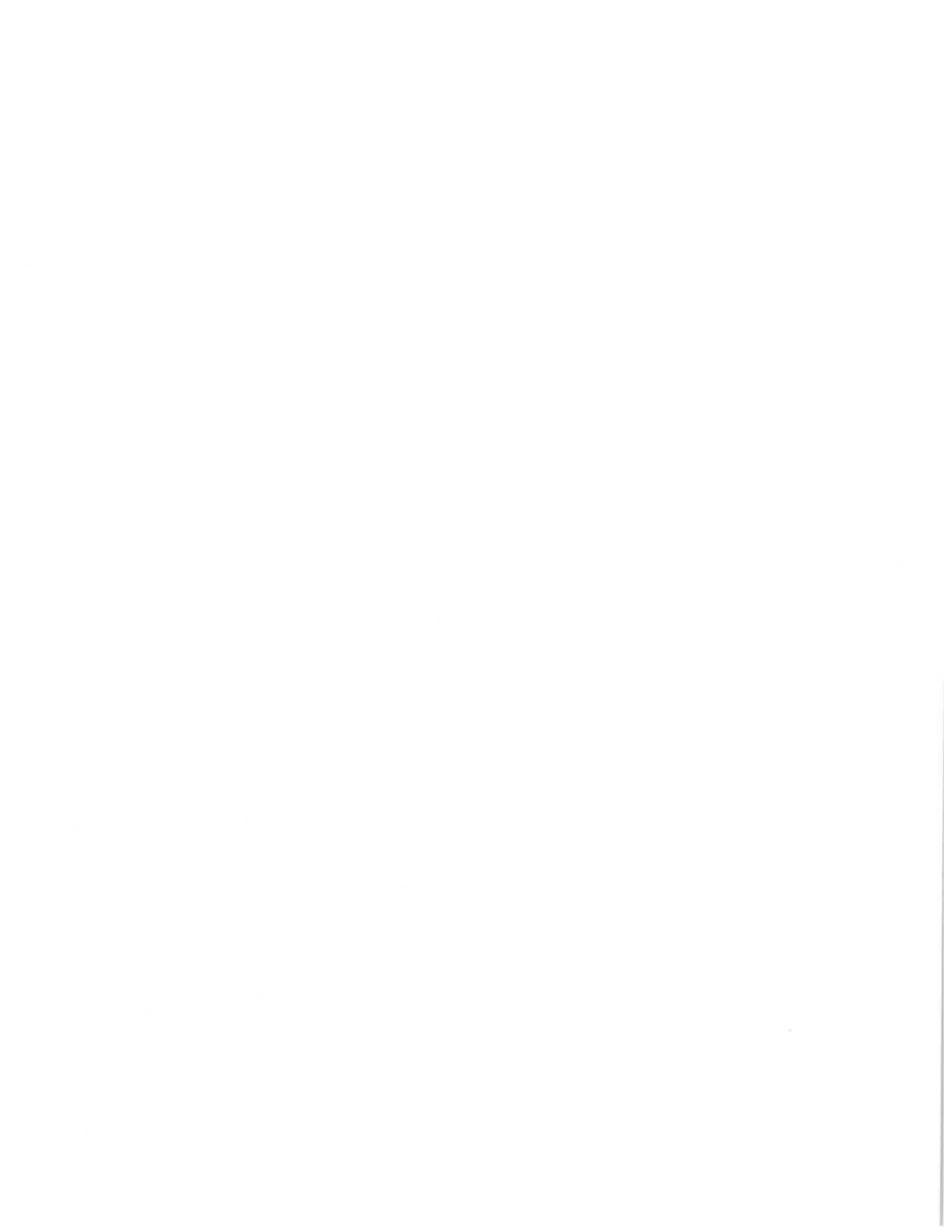
PART 2 – PRODUCTS

2.1 Bedding Material: Stone, 1003.10.3.2, of the referenced Standard.

PART 3 – EXECUTION

3.1 Installation: Install bedding material to widths and thicknesses as shown on the DRAWINGS in conformance with Section 726 of the referenced Standard and accepted by the ENGINEER.

END OF SECTION



SECTION 02732SEWER FORCE MAIN PIPE AND APPURTENANCESPART 1 - GENERAL

1.1 Scope: This Section covers the installation of 16" PVC sewer force main pipe, fittings, and appurtenances as shown on the Drawings and as specified herein.

1.2 Product Delivery, Storage and Handling:

A. Inspection of Material at Delivery Point: When delivered to the site, and prior to unloading, the CONTRACTOR shall inspect all pipe, valves, valve boxes and meters, and accessories for loss, damage or lack of specified identification and markings. Any defective or improper material shall be immediately marked and shall not be unloaded.

B. Handling: In shipping, storing and installing pipe, valves and accessories shall be kept in a sound, undamaged condition. They shall, at all time, be handled with care and shall not be dropped, dumped or bumped against any other object. Any material(s) damaged shall be marked and immediately removed from the job site.

C. Storing: Pipe shall be stored off the ground on sticking or pallets. Pipe shall be stacked with spigot ends projecting from the stack in opposite directions for alternate rows. Valves, valve boxes, couplings, fittings, etc. shall be kept clean and dry.

D. Defective Materials: All materials found at any time during the progress of the work to have cracks, flaws, or other defects will be rejected and marked and the CONTRACTOR shall promptly remove such defective material from the work site.

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 - Shop Drawings, Samples & Project Data.

1.4 Quality Assurance: All pipe and fittings shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the material to be furnished.

PART 2 - PRODUCTS

2.1 PVC Sewer Force Main Pipe: Provide 16-inch diameter PVC pressure pipe for sewer force main service conforming to ASTM D2241, SDR 25, with a minimum pressure rating of 165 psi. Pipe shall be manufactured from PVC compound meeting Class 12454-B or better and shall be suitable for wastewater service. Joints shall be integral bell-and-spigot with factory-installed elastomeric gaskets conforming to ASTM D3139, providing a watertight seal. Fittings shall be ductile iron mechanical joint.

2.2 Ductile Iron Mechanical Joints: Refer to Section 15120 – Mechanical Piping, Valves and Appurtenances.

2.3 Polyethylene Wrap: Refer to Section 15120 – Mechanical Piping, Valves and Appurtenances.

- 2.4 Valve Boxes: Refer to Section 15120 – Mechanical Piping, Valves and Appurtenances.
- 2.5 M.J. Restraint Devices: Refer to Section 15120 – Mechanical Piping, Valves and Appurtenances.
- 2.6 Joint Restraints: Refer to Section 15120 – Mechanical Piping, Valves and Appurtenances.
- 2.7 Buried Plug Valve: Refer to Section 15700 – 16” and 24” Buried Plug Valves.

PART 3 - EXECUTION.

3.1 Installation of Sewer Force Main Pipe and Fittings:

- A. All pipe, fittings and appurtenances shall be installed in strict accordance with the manufacturer's recommendations.
- B. All pipes and other related items laid in open trench excavations shall be haunched or bedded in an uniformly supported over their full length on beddings of the types specified. Flat-bottomed trenches shall be excavated and dewatered. All work shall be performed in a dry trench.
- C. All pipe, fittings and related items shall be carefully inspected in the field before lowering in the trench. Cracked, broken, warped, out of round or otherwise defective pipe, fittings, or other related items, as determined by the CONTRACTOR or the ENGINEER, shall be pulled and not installed. Such rejected pipe shall be clearly tagged in such manner as not to deface or damage it, and the pipe shall then be removed from the job site by the CONTRACTOR at his own expense.
- D. All force main pipe and fittings shall be installed conforming to AWWA C605.
- E. Every precaution shall be taken to prevent foreign material from entering sewer pipe while it is being placed in the trench. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a water tight plug or other means approved by the ENGINEER. If water is in the trench, the seal shall remain in place until the trench is pumped enough to resume laying operations. No pipe shall be laid in water or when, in the opinion of the ENGINEER, trench conditions are unsuitable.

3.2 Depth of Cover:

- A. Force main shall be laid in an open cut trench so as to have a minimum of four (4) feet of earth cover. Where required by site conditions or noted on the Drawings, the CONTRACTOR shall provide for extra depth burial.
- B. The CONTRACTOR shall install all sewer force mains as to maintain a minimum horizontal distance of six (6) feet from all water lines and minimum vertical distance of eighteen (18) inches from all water lines. All distances shall be measured from the outside diameter of each pipe.

3.3 Installation of Polyethylene Wrap: All underground ductile iron sewer force main pipe, fittings and valves shall be encased in a polyethylene wrap. The wrap shall be installed in accordance with the manufacturer's recommendations and AWWA C600. The wrap shall be secured to the pipe, fittings, valves, etc. with polyethylene compatible adhesive tape. All rips, tears and other damage shall be repaired with the adhesive tape.

3.4 Installation of Underground Valves and Valve Boxes:

A. All valves and valve boxes shall be backfilled with select fill.

B. The valve boxes shall have a concrete pad poured at the top of the box as detailed on the Drawings and painted "Sewer Green".

3.5 Cutting, Capping, and Blocking Lines: Existing sewer force main pipe is to be cut in a straight and true face after arranging on a timing and sequence of valving-off the section to be cut. The cut ends shall be cleaned for attachment of appropriate fittings. The capped end shall be backfilled with structural material in such a manner as to ensure the integrity of the cap.

3.6 Installation of Concrete Thrust Blocking:

A. Concrete thrust blocking on force mains shall be provided at all tees, bends, dead ends, valves and other such appurtenances as indicated on the standard detail sheet of the Drawings.

B. Thrust blocking shall not be measured and paid for separately and is considered a subsidiary part of the pipeline work and the cost of the thrust blocking shall be included in the pipeline unit price or considered a subsidiary obligation under this Contract.

3.7 Connection to Existing Lines:

A. Connection to existing lines shall be performed under the direct inspection of the ENGINEER. The ENGINEER shall be notified 24 hours in advance of any planned line connection.

B. Verify the outer dimension and type of existing lines which are to be connected for tying the new line to the existing lines prior to ordering connection equipment and fittings. Any deviation from the data shown on the Drawings shall be brought to the attention of the ENGINEER for resolution.

3.8 Pressure and Leakage Testing of Sewer Force Mains:

A. General: Pressure and leakage testing shall conform to the requirements of AWWA C605, "Section 4: Hydrostatic Testing", except as modified herein.

B. All water required for pressure and leakage testing shall be provided by the CONTRACTOR.

C. All pipe and fittings shall be field tested. The CONTRACTOR shall supply all labor, equipment, materials, gauges, pumps, meters, and incidentals required for testing. The ENGINEER shall be notified at least 48 hours in advance of the test.

D. Testing shall not be made until compressive strength results for thrust blocking concrete in the test section have been received and reviewed by the ENGINEER. Under no circumstances shall the CONTRACTOR proceed with pressure and leakage testing until a minimum of seven (7) days after the final concrete thrust block in the test section has been installed.

E. The test pressure shall be 150 psig for two (2) hours. The test pressure shall be measured at the lowest point along the test section by a recording type pressure gauge and a copy of the readout shall be submitted to the ENGINEER upon completion of the test.

F. Pipe trenches shall be backfilled, but fittings, valves, and joints shall be left uncovered during the test. Permanent pavement shall not be installed over the backfilled trench until satisfactory test results have been obtained.

G. Testing procedure shall be as follows:

1. Fill line slowly with water. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure.
2. Expel air completely from the line during filling and again before applying test pressure. Air shall be expelled by means of taps at points of highest elevation.
3. Apply test pressure and allow the test section to stabilize at the test pressure before conducting the leakage test.
4. Measure the quantity of water that must be pumped into the line to maintain pressure within 5 psi of the test pressure for a period of 2 hours. This quantity is defined as leakage.
5. Carefully examine all exposed pipe, fittings, valves and joints during the test for leakage.
6. Upon completion of the test, the pressure shall be bled off from a location other than the point where the pressure is monitored. The pressure drop shall be witnessed by the ENGINEER at the point where the pressure is being monitored and shall show on the recorded pressure readout submitted to the ENGINEER.

H. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the test pressure, in psig.

I. If any section of pipe installed produces leakage greater than the allowable, the CONTRACTOR shall, at his own expense, locate and repair the cause of leakage and retest the line.

J. All visible leaks are to be repaired regardless of the amount of leakage.

3.9 Cleaning Force Mains: At the conclusion of the work, the CONTRACTOR shall thoroughly clean all of the new pipeline by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered during construction. Debris cleaned from the lines shall be removed from the job site. If, after this cleaning, any obstructions remain, they shall be removed.

- END OF SECTION -



SECTION 02903WARNING SIGNSPART 1 - GENERAL

1.1 Scope: This section covers the furnishing and installation of informational signage at the Pump Station Site(s) and the WWTP site as shown on the Drawings and specified herein.

1.2 Submittals: Submit product data and cut sheets in accordance with the provisions of Section 01340 - SHOP DRAWINGS, SAMPLES AND PRODUCT DATA.

PART 2 - PRODUCTS

2.1 Acceptable Manufacturer: Signs shall be sized as shown on Drawings and 0.08" thick aluminum panels (LDOTD 1015.02.2) with type "V" super high intensity sheeting (LDTOD 1015.05.1) and mounted as shown on the Drawings. See Drawings for colors. No "stick-on" components allowed. Warning sign shall be as manufactured by Legible Signs, Inc. of Rockford, Illinois 1(800)-435-4177 or approved equal.

PART 3 - EXECUTION

3.1 Installation: Signs shall be secured to fence using #8 stainless steel pan head screws (4 per sign) and S.S. attachment hardware behind each sign.

3.2 Cleaning: Remove any protective films upon completion of installation.

- END OF SECTION -

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 3 - CONCRETE

- Section 03100 - CONCRETE FORMWORK
- Section 03200 - CONCRETE REINFORCEMENT
- Section 03250 - WATERSTOPS
- Section 03300 - CAST-IN-PLACE CONCRETE

SECTION 03100CONCRETE FORMWORKPART 1 - GENERAL

1.1 Scope: This Section covers concrete formwork as required to construct the cast in place concrete work as indicated on the Drawings.

1.2 Applicable Publications: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. U.S. Department of Commerce, National Bureau of Standards (NBS) Product Standard:

PS 1 Construction and Industrial Plywood.

B. American Concrete Institute (ACI) Standard:

347 Recommended Practice for Concrete Formwork.

C. American National Standard Institute (ANSI) Standard:

A135.4 Basic Hardboard.

D. State of Louisiana Department of Transportation, Office of Highways Standard Specification:

Louisiana Standard Specification for Roads and Bridges, 2006 Edition.

1.3 Design: Formwork shall be designed in accordance with methodology of ACI 347 for anticipated loads, lateral pressures, and stresses. Forms shall be capable of producing a surface which meets the requirements of the class of finish specified or as noted on the Drawings. Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

PART 2 - PRODUCTS

2.1 Form Materials:

A. Forms finished surfaces shall be plywood panels conforming to NBS PS 1, Grade B-B concrete form panels, Class I or II; tempered concrete form hardboard conforming to ANSI A135.4; other approved concrete form material; or steel, except that steel lining on

wood sheathing shall not be used. Forms for round columns may have one vertical seam.

B. **Form Ties:** Form ties shall be factory fabricated metal ties, shall be of the removable or internal disconnecting or snap-off type, and shall be of a design that will not permit form deflection and will not spall concrete upon removal. Solid backing shall be provided for each tie. Except where removal tie rods are used, ties shall leave holes in the concrete surface less than 1/4" nor more than 1" deep and not more than 1" in diameter.

C. **Form Releasing Agents:** Form releasing agents shall be commercial formulations that will not bond with, stain or adversely affect concrete surfaces. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds.

PART 3 - EXECUTION

3.1 **Installation:** Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements specified or as noted on the Drawings and conforming to construction tolerance given in Table 1. Where concrete surfaces are to have a Class B finish, joints in form panels shall be arranged as approved. Where forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface so as to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be reused if there is any evidence of surface wear and tear or defects which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse. Form ties that are to be completely withdrawn shall be coated with a nonstaining bond breaker.

3.2 **Chamfering:** Except as otherwise shown, external corners that will be exposed shall be chamfered.

3.3 **Coating:** Forms for Class B finished surfaces shall be coated with a form releasing agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions. Forms for Class C and D finished surfaces may be wet with water in lieu of coating immediately before placing concrete, except that in cold weather with probable freezing temperatures coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.4 **Removal of Forms:** Forms shall be removed in a manner that will prevent injury to the concrete and insure the complete safety of the structure. Formwork for columns, walls, side of beams and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement. Supporting forms and shores shall not be removed from beams, floors and walls until the structural units are strong enough to carry their own weight and any other construction or natural loads. In no case will supporting forms or shores be removed before the concrete strength has reached 70 percent of design strengths as determined by field cured cylinders or other approved methods.

TABLE 1

TOLERANCES FOR FORMED SURFACES

1.	Variations from the plumb:	
a.	In the lines and surfaces inch of columns, piers, walls and in arrises	In any 10 feet of length... $\frac{1}{4}$ " Maximum for entire length..1"
b.	For exposed corner columns, control-joint grooves, and other conspicuous lines	In any 20 feet of length... $\frac{1}{4}$ " Maximum for entire length.. $\frac{1}{2}$ "
2.	Variation from the level or from the grades indicated on the Drawings:	In any 10 feet of length... $\frac{1}{4}$ " In any bay or in any 20 feet of length....."
a.	In slab soffits, ceilings, beam soffits, and in arrises, measured before removal of supporting shores	Maximum for entire length.. $\frac{3}{4}$ "
b.	In exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines	In any bay or in any 20 feet of length..... $\frac{1}{4}$ " Maximum for entire length.. $\frac{1}{2}$ "
3.	Variation of the linear building lines from established position in plan	In any 20 feet..... $\frac{1}{2}$ " Maximum.....1"
4.	Variation of distance between walls, columns, partitions	$\frac{1}{4}$ " per 10 feet of distance, but not more than $\frac{1}{2}$ " in any one bay, and not more than 1" total variation
5.	Variation in the sizes and locations of sleeves, floor openings, and wall opening	Minus..... $\frac{1}{4}$ " Plus..... $\frac{1}{2}$ "
6.	Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls	Minus..... $\frac{1}{4}$ " Plus..... $\frac{1}{2}$ "
7.	Footings:	
a.	Variation of dimensions in plan	Minus..... $\frac{1}{2}$ " Plus.....2" when formed or plus 3" when placed against unformed excavation
b.	Misplacement of eccentricity	2 percent of the footing width in the direction of misplacement but not more than.....2"
c.	Reduction in thickness	Minus.....5 percent of specified

TABLE 1

TOLERANCES FOR FORMED SURFACES

		thickness
8.	Variation in steps:	Riser..... 1/16"
	a. In a flight of stairs	Tread.....1/16"
	b. In consecutive steps	Riser..... 1/16"
		Tread.....1/16"

- END OF SECTION -

SECTION 03200CONCRETE REINFORCEMENTPART 1 - GENERAL

- 1.1 Scope: This Section covers steel reinforcement for portland cement concrete.
- 1.2 Applicable Publications: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- A. American Concrete Institute (ACI) Standard:
- | | |
|-----|--|
| 318 | Building Code Requirements for Reinforced Concrete |
|-----|--|
- B. American Society for Testing and Materials (ASTM) Publications:
- | | |
|------|--|
| A82 | Cold-Drawn Steel Wire for Concrete Reinforcement. |
| A120 | Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Uses. |
| A185 | Welded Steel Wire Fabric for Concrete Reinforcement. |
| A497 | Welded Deformed Steel Wire Fabric for Concrete Reinforcement. |
| A499 | Steel Bars and Shapes, Carbon Rolled from "T" Rails. |
| A615 | Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. |
| A675 | Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical Properties. |
- C. American Welding Society, Inc. (AWS) Publication:
- | | |
|------|--|
| D1.4 | Structural Welding Code - Reinforcing Steel. |
|------|--|
- D. Concrete Reinforcing Steel Institute (CRSI) Publication:
- Manual of Standard Practice (23rd Ed. 2nd Prtg 1981; 1983).

E. State of Louisiana Department of Transportation and Development, Office of Highways Standard Specifications:

Louisiana Standard Specifications for Roads and Bridges, 2006 Edition.

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples And Project Data.

1.4 Delivery and Storage: Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

PART 2 - PRODUCTS

2.1 Dowels shall conform to ASTM A 675, Grade 80, or ASTM A 499.

2.2 Reinforcing Steel shall be deformed bars conforming to ASTM A 615.

2.3 Wire Ties shall be 16-gauge or heavier black annealed steel wire.

2.4 Supports: Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI Manual of Standard Practice and shall be steel chairs only. Concrete blocks or bricks are not permitted. For slabs on grade, supports shall be steel fabricated with bearing plates or specifically designed wire-fabric supports fabricated of plastic.

PART 3 - EXECUTION

3.1 Reinforcement: Reinforcement shall be fabricated to shapes and dimension shown and shall conform to the requirements of ACI 318. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Bars shall not be bent after embedment in concrete.

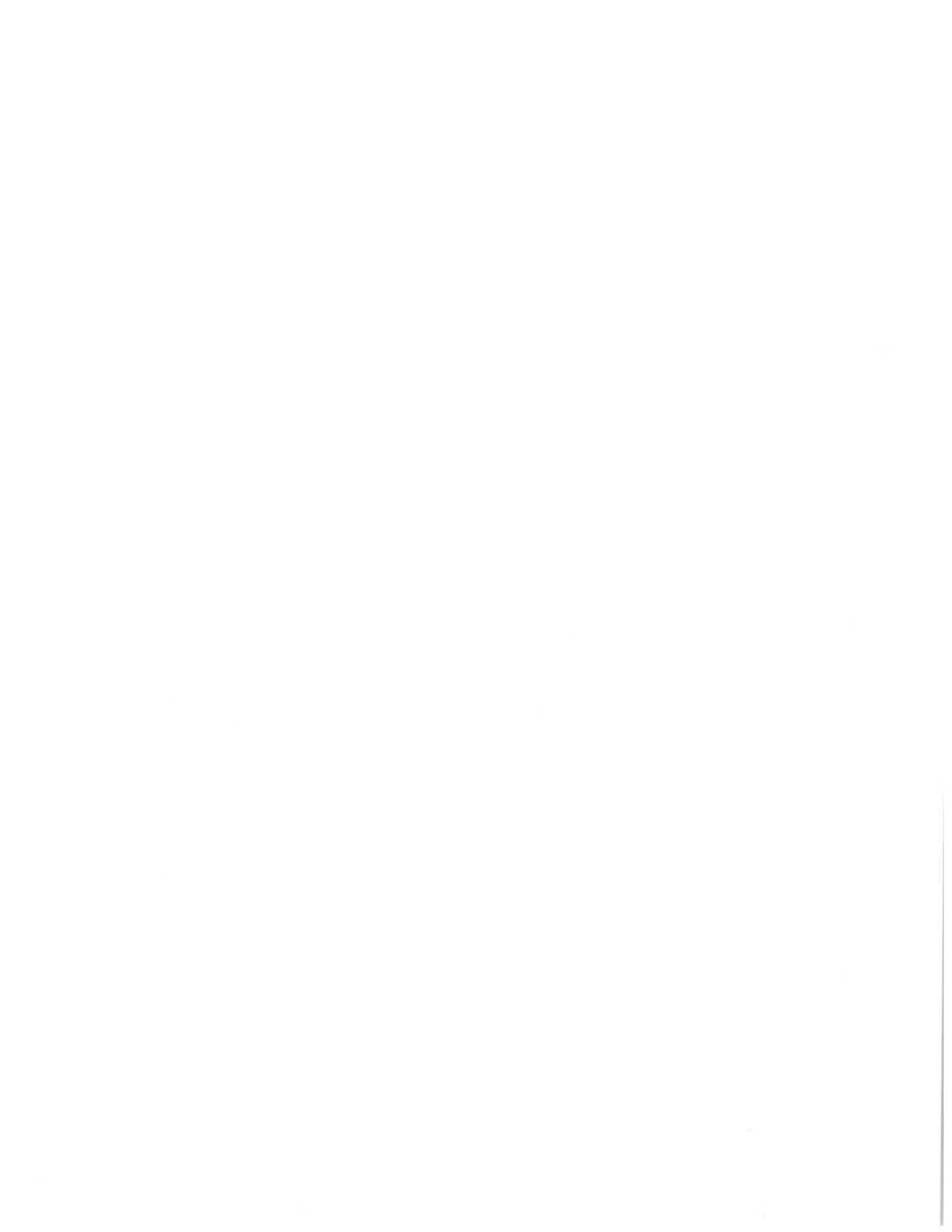
A. Placement: Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bond with the concrete. Reinforcement shall be placed in accordance with ACI 318 at locations shown plus or minus one bar diameter. Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints. Concrete coverage shall be as indicated or as required by ACI 318. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved before concrete is placed.

B. Splicing: Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated. Splicing shall be by lapping or by mechanical or welded butt connection; except that lap splices shall not be used for bars larger than No. 11 unless otherwise indicated. Welding shall conform to AWS D1.4. Welded butt splices shall be full penetration butt welds. Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each

bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6-inches. Mechanical butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Bars shall be flame dried before butt splicing. adequate jigs and clamps or other devices shall be provided to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.

3.2 Dowels shall be installed in slabs on grade at locations indicated and at right angles to joint being doweled. Dowels shall be accurately aligned parallel to the finished concrete surface and rigidly supported during concrete placement. One end of dowels shall be coated with a bond breaker.

- END OF SECTION -



SECTION 03250WATERSTOPSPART 1 - GENERAL

1.1 Scope: This Section covers water stops for poured in place concrete structures.

1.2 Applicable Publications: The publication listed below forms a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. Corps of Engineers Handbook for Concrete and Cement (CRD) Publications:

CRD-C 513-74 Rubber Waterstops

CRD-C 572-74 Polyvinyl chloride Waterstops

B. American National Standards Institute (ANSI) Standard:

A135 4-1982 Basic Hardboard

C. American Society for Testing and Materials (ASTM) Publications:

D9994 Preformed Expansion Joint Filler
(Bituminous Type)

D 1751-83 Preformed Expansion Joint Filler for
Concrete Paving and Structural Construction
(Nonextruding and Resilient Bituminous Types)

D 1752-84 Preformed Sponge Rubber and Cork Expansion
Joint Fillers for Concrete Paving and Structural
Construction

D 2628-81 Preformed Polychloroprene Elastomeric Joint Seals
for Concrete Pavements

D 2835-72 Lubricant for Installation of Preformed
Compression Seals in Concrete Pavements

D. Louisiana Department of Transportation and Development/Office of Highways
Publication:

Louisiana Standard Specification for Roads and Bridges, 2016 Edition

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 - Shop Drawings, Samples and Product Data. Submittals shall include manufacturer's descriptive data, including recommended instructions for splicing of waterstops, etc.

1.4 Delivery and Storage: Material delivered and placed in storage shall be stored off the ground and protected from moisture, dirt and other contaminants. Sealants shall be delivered in the manufacturer's original unopened containers. Sealants whose self life has expired shall be removed from the site.

PART 2 - PRODUCTS

2.1 Elastomeric PVC Waterstops: Waterstops shall conform to CRD-C 572. Waterstops in construction joints shall be continuous and shall be dumbbell shaped. Waterstops shall be nine (9") inches wide with a 3/8" web thickness and 3/4" bead along each edge. Elastomeric PVC waterstops shall be Model 751 as manufactured by Greenstreak Plastic Products Company of St. Louis, Missouri, Model D6-38 as manufactured by Gamco, Inc. of Cincinnati, OH, or approved equal. Waterstop embedment shall be equal on each side of the joint.

2.2 Pipe Penetration Waterstop: Penetrations of pipes through cast-in-place concrete shall be "LinkSeal", "LS Modular" or "CS Sleeve" of the size required for precast or cored-in-place as shown on the DRAWINGS.

2.3 Non-Shrink Epoxy Grout: Refer to Section 03300 – Cast-In-Place Concrete.

PART 3 - EXECUTION

3.1 Construction Joints: Construction joints shall be installed at locations indicated on the Drawings. Construction joints shall be constructed by utilizing preformed, rigid steel, key strips or board forms. Waterstop shall be secured within the construction joint prior to pouring concrete. Construction joint material (metal or board) shall be removed prior to subsequent pour.

3.2 Waterstops: Waterstops shall be of the type indicated and shall be installed at the location shown to form a continuous water-tight diaphragm. Adequate provision shall be made to support and completely protect the waterstops during the progress of the work. Any waterstop punctured or damaged shall be repaired or replaced. Splices shall be made in conformance with the recommendations of the waterstop manufacturer. Continuity of cross sectional features shall be maintained across the splice. Splices showing evidence of separation after bending shall be remade.

- END OF SECTION -

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 Scope: This Section covers cast-in-place concrete work indicated on the Drawings and specified herein.

1.2 Referenced Standard: Conform to the following Sections of the State of Louisiana, Department of Transportation and Development, "Louisiana Standard Specifications for Roads and Bridges", 2006 Edition, except as modified herein:

- Section 805 - Structural Concrete
- Section 901 - Portland Cement Concrete

All references made therein to measurement and payment are hereby deleted.

1.3 Applicable Publications: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- A. U.S. Army Corps of Engineers Handbook for Cement and Concrete (CRD):
 - CRD-C 621 Cloth, Burlap, Jute (or Kenaf)
- B. American Concrete Institute (ACI) Standards:
 - 211.1 Selecting Proportions for Normal Heavyweight, and Mass Concrete
 - 301 Structural Concrete for Buildings
 - 305R Hot Weather Concreting
 - 318 Building Code Requirements for Reinforced Concrete
- C. American Society for Testing and Materials (ASTM) Publications:
 - A167 Stainless and Heat-Resisting Chromium - Nickel Steel Plate, Sheet and Strip
 - C42 Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - C 94 Ready-Mixed Concrete

C109	Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50mm Cup Specimens)
C150	Portland Cement 171 Sheet Materials for Curing Concrete
C260	Air-Entraining Admixtures for Concrete
C494	Chemical Admixtures for Concrete
C537	Test Method of Reliability of Glass Coatings on Glassed Steel Reaction Equipment by High Voltage
C597	Pulse Velocity Through Concrete
C803	Penetration Resistance of Hardened Concrete
C805	Rebound Number of Hardened Concrete
C827	Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
C1017	Chemical Admixture for Use in Producing Flowing Concrete

D. National Ready-Mixed Concrete Association (NRMCA) Publications:

Certification of Ready-Mixed Concrete Production Facilities (Jan. 1, 1976).

Concrete Plant Standards/Concrete Plant Manufacturers Bureau 8th Rev. 1986.

E. Truck Mixer Manufacturers Bureaus (TMMB) Publication:

Truck Mixer and Agitator Standards (Jan. 1, 1981; 10th Rev.)

1.4. Mixture Proportioning, Normal Weight Concrete: Trial batches shall contain materials proposed to be used in the project. Trial mixtures having proportions, consistencies and air content suitable for the work shall be made based on methodology described in ACI 211.1. Trial mixes shall be proportioned to produce concrete strengths specified. Trial mixtures shall be designed for maximum permitted slump and air content.

1.5. Investigation of Low-Strength Test Results: When any strength test of standard-cured test cylinder falls below the specified strength requirement by more than 500 pounds per square inch, or if tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that load-carrying capacity of the structure is not jeopardized. Non-destructive testing in accordance with ASTM C 597, C 803, or C 805 may be permitted by the ENGINEER to determine the relative strengths at various locations in the structure as an aid in evaluating concrete strength in place or for electing areas to be cored. Such tests, however, shall not be used as a basis for acceptance or rejection. When strength of concrete in place is considered potentially deficient, cores shall be obtained and tested in accordance with ASTM C 42. At least three (3) representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location of the cores shall be determined by the ENGINEER to least impair the strength of the structure. If the concrete in the structure will be dry under service conditions, the cores shall be air dried (temperature 60 to 80 degrees F, relative humidity less than 60 percent) for seven (7) days before testing and shall be tested dry. If the concrete in the structure will be more than superficially wet under service conditions, the cores shall be tested after moisture conditioning in accordance with ASTM C 42. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to or at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement. If the core tests are inconclusive or impractical to obtain, or if structural analysis does not confirm the safety of the structure, load tests may be directed by the ENGINEER in accordance with the requirements of ACI 318. Concrete work evaluated by structural analysis or by results of a load test and found deficient shall be corrected in a manner satisfactory to the ENGINEER and shall require the approval of the ENGINEER.

1.6. Submittals: Submittals shall be provided in accordance with Section 01340 - Shop Drawings, Samples And Project Data. Submittals shall include concrete mix designs.

PART 2 - PRODUCTS

2.1 General: Material for portland cement concrete shall conform to the applicable sections and subsections for the Referenced Standard.

2.2. Cementitious Materials: Cementitious materials shall be of one type and from one source when used in concrete which will have surfaces exposed in the finished structure. Cementitious materials shall conform to the following:

- A. Cement: ASTM C 150, Type I or II., however, portland cement concrete used in pump station construction shall be constructed utilizing ASTM C150, Type II cement.
- B. Portland-Pozzolan Cement shall not be used on this project.
- C. Flyash shall not be used on this project.

2.3. Aggregates: Shall conform to the Louisiana Standard Specifications for Roads and Bridges for Portland Cement Concrete and Mortar materials as applicable.

2.4. Water: Shall be potable. Water for curing shall not contain any substance injurious to concrete, or which causes staining.

2.5. Admixtures: Shall conform to the following:

A. Accelerating Admixture: ASTM C 494, Type C or E. No calcium chloride shall be permitted.

B. Air-Entraining Admixture: ASTM C 260.

C. Flowing Concrete Admixture: ASTM C 1017, Type 1 or 2.

D. Water-Reducing or Retarding Admixture: ASTM C 494, Type A, B, D, F, or

2.6. Curing Materials: Impervious sheets conforming to ASTM C 171, type optional, except that polyethylene film, if used, shall be white opaque.

2.7. Non-Shrink Cement Grout: Non-shrink cement grout shall consist of cement, aggregate and additives formulated to meet the following volume change requirements. Early volume change (within 24 hours) as tested by ASTM C827 shall be limited to zero (0) percent shrinkage and four (4) percent maximum expansion. Long term volume change of hardened non-shrink cement grout (after 1 day for cure) shall conform to the Corps or Engineers Specification for Non-Shrink Grout, CRD-C621-82B. Shrinkage shall be zero (0) percent and expansion limited to a maximum of 0.4 percent volume change. Cement additives required to meet this specification shall be recommended by the grout manufacturer but shall be non-staining and non-metallic. Grout shall be equal to "Five Star" cement products manufactured by the U.S. Grout Corporation, Quikrete Products, or approved equal.

2.8 Non-Shrink Epoxy Grout: Non-shrink epoxy grout shall meet plastic volume changes within the first four (4) hours of zero (0) percent shrinkage and four (4) percent maximum expansion as tested by ASTM C827. Restrained hardened epoxy grout shall have zero (0) percent shrinkage as tested by ASTM C537. Epoxy grout shall have zero (0) percent expansion in volume change after set under constant temperature conditions. Epoxy grout shall be 100 percent solids formulated with resin, hardener and aggregate as recommended by the manufacturer. Epoxy grout shall be equal to "Five Star" epoxy products manufactured by the U.S. Grout Corporation, For-Shor of Salt Lake City, UT, or approved equal.

2.9 Concrete Anchor Adhesive: Provide a two-component, non-sag structural epoxy adhesive anchor system approved for overhead, horizontal, and vertical installations in cracked and uncracked concrete, qualified in accordance with ACI 355.4 and ICC-ES (International Code Council – Evaluation Service) AC308, and compliant with ACI 318, Chapter 17. Adhesive shall be suitable for anchoring steel threaded rods conforming to ASTM A193 or reinforcing bars conforming to ASTM A615. Anchor load capacities shall not exceed the values published in the applicable ICC-ES Evaluation Report (ESR) for the specified adhesive, anchor size, embedment depth, concrete condition, and installation orientation, including overhead installations. Acceptable products include Hilti HIT-RE 500 V3, Simpson Stront-Tie SET-XP, or approved

equal.

2.10 Continuous Premoulded Water Stops: Refer to Section 03250 – Waterstops.

2.11 Pipe Penetrations: Refer to Section 03250 – Waterstops.

PART 3 - EXECUTION

3.1 General: All work related to this Section shall conform to the applicable provisions contained in the referenced Standard.

3.1 Preparation Of Surfaces: Surfaces to receive concrete shall be clean and free from frost, ice, mud, and water. Conduit and other similar items shall be in place and clean of any deleterious substance.

3.2 Foundations: Earthwork for foundations shall be as specified in Section 02203 - Excavation and Embankment.

3.3 Installation of Embedded Items: Embedded items shall be free from oil, loose scale or rust, and paint. Embedded items shall be installed at the locations indicated and required to serve the intended purpose. Voids in sleeves, slots and inserts shall be filled with readily removable material to prevent the entry of concrete.

3.4 Batching, Mixing and Transporting Concrete: Ready-mixed concrete shall be batched, mixed and transported in accordance with ASTM C 94, except as otherwise specified. Truck mixers, agitators, and non-agitating units shall comply with TMMB "Truck Mixer and Agitator Standards". Plant equipment and facilities shall conform to NRMCA "Certification of Ready-Mixed Concrete Production Facilities". Site-mixed concrete shall be mixed in accordance with ACI 301.

A. Admixtures: Admixtures shall be batched within an accuracy of 3 percent. Where two or more admixtures are used in the same batch, they shall be batched separately and must be compatible. Retarding admixture shall be added within one minute after addition of water is complete or in the first quarter of the required mixing time, whichever is first. Superplasticizing admixtures shall be added as recommended by manufacturer. Concrete that shows evidence of total collapse or segregation caused by the use of admixture shall be removed from the site.

B. Control of Mixing Water: No water from the truck system or elsewhere shall be added after the initial introduction of mixing water for the batch except when on arrival at the job site, the slump of the concrete is less than that specified. Water added to bring the slump within the specified range shall not change the total water in the concrete to a point that the approved water-cement ratio is exceeded. The drum shall be turned an additional thirty (30) revolutions, or more, if necessary, until the added water is uniformly mixed into the concrete. Water shall not be added to the batch at any later time.

3.5 Conveying Concrete: Concrete shall be conveyed from mixer to forms as rapidly as possible and within the time interval specified in paragraph entitled CONCRETE PLACEMENT by methods which will prevent segregation or loss of ingredients.

A. Chutes: When concrete can be placed directly from a truck mixer or other transporting equipment, chutes attached to this equipment may be used. Separate chutes will not be permitted except when specifically approved.

B. Buckets: Bucket design shall be such that concrete of the required slump can be readily discharged. Bucket gates shall be essentially grout tight when closed. The bucket shall provide means for positive regulations of the amount and rate of deposit in each dumping position.

C. Belt Conveyors: Belt conveyors may be used when approved. Belt conveyors shall be designed for conveying concrete and shall be operated to assure a uniform flow of concrete to the final place of deposit without segregation or loss of mortar. Conveyors shall be provided with positive means for preventing segregation of the concrete at transfer points and point of placement.

D. Pumps: Concrete may be conveyed by positive displacement pumps when approved. Pump shall be the piston or squeeze pressure type. Pipeline shall be steel pipe or heavy duty flexible hose. Inside diameter of the pipe shall be at least three (3) times the maximum size of the coarse aggregate. Distance to be pumped shall not exceed the limits recommended by the pump manufacturer. Concrete shall be supplied to the pump continuously. When pumping is completed, the concrete remaining in the pipeline shall be ejected without contaminating the concrete in place. After each use, the equipment shall be thoroughly cleaned. Flushing water shall be wasted outside the forms.

3.6 Concrete Placement: Mixed concrete which is transported in truck mixers or agitators or concrete which is truck mixed, shall be discharged within 1 ½ hours or before the drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates. When the concrete temperature exceeds 85 degrees F, the time shall be reduced to 45 minutes. Concrete shall be placed within fifteen (15) minutes after it has been discharged from the truck.

A. Placing Operation: Concrete shall be handled from mixer to forms in a continuous manner until the approved unit of operation is completed. Adequate scaffolding, ramps and walkways shall be provided so that personnel and equipment are not supported by in-place reinforcement. Placing will not be permitted when the sun, heat, wind, or limitations of facilities furnished by the CONTRACTOR prevent proper consolidation, finishing and curing. Concrete shall be deposited as close as possible to its final position in the forms, and there shall be no vertical drop greater than five (5) feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it will be effectively consolidated in horizontal layers not more than twelve (12) inches thick, except that all slabs shall be placed in a single layer. Concrete to receive other construction shall be screeded to the proper level to avoid excessive shimming or grouting.

B. Consolidation: Immediately after placing, each layer of concrete shall be consolidated by internal vibrators, except for slabs four (4") inches or less. The vibrators shall at all times be adequate in effectiveness and number to properly

consolidate the concrete; a spare vibrator shall be kept at the job site during all concrete placing operations. The vibrators shall have a frequency of not less than 8,000 vibrations per minute, and the head diameter and amplitude shall be appropriate for the concrete mixture being placed. Vibrators shall be inserted vertically at uniform spacing over the area of placement. The distance between insertions shall be approximately 1 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least six (6") inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then withdrawn slowly. The use of form vibrators must be specifically approved. Vibrators shall not be used to transport concrete within the forms. Slabs four (4") inches and less in thickness shall be consolidated by properly designed vibrating screeds or other approved technique. Excessive vibration of lightweight concrete resulting in segregation and floatation of coarse aggregate shall be avoided.

C. Cold Weather Requirements: Special protection measures, approved by the ENGINEER, shall be used if freezing temperatures are anticipated before the expiration of the specified curing period. The ambient temperature of the air where concrete is to be placed and the temperature of surfaces to receive concrete shall be not less than 40 degrees F. The temperature of the concrete when placed shall be not less than 50 degrees F nor more than 75 degrees F. Heating of the mixing water or aggregates will be required to regulate the concrete placing temperature. Salt, chemicals or other materials shall not be incorporated in the concrete to prevent freezing.

D. Warm Weather Requirements: Concrete shall be placed in accordance with American Concrete Institute Standard ACI 305. During periods of warm weather, the following precautions shall be taken to prevent the formation of plastic-shrinkage cracks resulting from excessive loss of moisture from the concrete.

1. The metal forms and/or underlying base or subgrade materials that will not be covered by vapor barrier or similar material shall be cooled by sprinkling with water immediately before the placement of concrete.
2. All concrete shall be delivered to the forms at a temperature below 85 degrees F, except that concrete with retarding admixtures may have temperatures of 85 degrees F to 90 degrees F as deposited in the forms.
3. Placement may be allowed only at night or in early morning hours if necessary to maintain the concrete temperature and keep forms cool.
4. The concrete shall be placed and finished as rapidly as practical and curing will start immediately after final finishing has been completed on any section of a floor or placement.
5. The finished surface of the concrete shall be kept damp by applying a water fog or mist with approved spraying equipment until mats can be applied as required by the moist curing method.
6. Curing for the first 24 hours after placement shall be by the moist curing

method. After this initial curing period any of the specified methods may be used for the remaining period of curing.

E. Floor Slabs on Grade:

1. Capillary Vapor Barrier: Immediately before placing concrete, the capillary water barrier or subgrade under slabs in buildings shall be covered with a vapor barrier. Punctures and tears during subsequent operations shall be patched. Edges shall be lapped not less than four (4") inches and ends not less than six (6") inches. Patches and lapped joints shall be sealed with a pressure-sensitive adhesive or pressure-sensitive tape, not less than two (2") inches wide and compatible with the membrane.

2. Placement: Placement of concrete shall be continuous so that each unit of operation will be monolithic. Concrete shall be consolidated, screeded to grade, and prepared for the specified finish. If not indicated on the Drawings, joints shall be located at column centerlines and intermediate intervals so that each panel shall be not more than 625 square feet in area and panels shall be approximately square with no side longer than 25 feet. Diamond-shaped isolation joints shall be provided for the full slab depth at columns on separate footings, and shall be constructed so that corners of isolation joints will meet at crack control joints. Where columns bear on thickened slabs or thickened edges, contraction or expansion joints shall be offset from these locations. Forms shall remain in place for at least 24 hours after concrete placement.

3.7 Construction Joints: Construction joints shall be located as indicated or approved. Where concrete work is interrupted by weather, end of work shift or other similar type of delay, location and type of construction joint shall be subject to approval of the ENGINEER. Unless otherwise indicated and except for slabs on grade, reinforcing steel shall extend through construction joints. Construction joints in slabs on grade shall be keyed or doweled as shown. Concrete columns, walls, or piers shall be in place at least two (2) hours, or until the concrete is no longer plastic, before placing concrete for beams, girders or slabs thereon.

3.8 Finishing Concrete:

A. Formed Surfaces:

1. Repair of Surface Defects: Surface defects shall be repaired within 24 hours after the removal of forms. Honeycombed and other defective areas, including holes left by removal of tie rods, shall be cut back to solid concrete or to depth of not less than 1 inch, whichever is greater. Edges shall be cut perpendicular to the surface of the concrete. The prepared areas shall be dampened and brush coated with neat cement grout. The repair shall be made using mortar consisting of not more than 1 part cement to 2-1/2 parts sand. The mixed mortar shall be allowed to stand to stiffen (approximately 45 minutes), during which time the mortar shall be intermittently remixed without the addition of water. After the mortar has attained the stiffest consistency that will permit placing, the patching mix shall be thoroughly tamped into place by means approved by the ENGINEER and finished slightly higher than the surrounding

surface. For Class 2 finished surfaces the cement used in the patching mortar shall be a blend of job cement and white cement proportioned to produce a finished repair surface matching, after curing, the color of adjacent surfaces. Holes left after the removal of form ties shall be cleaned and filled with patching mortar. Holes left by the removal of tie rods shall be reamed and filled with patching mortar. Repaired surfaces shall be cured as required for adjacent surfaces. The temperature of concrete, mortar patching material, and ambient air shall be above 50 degrees F while making repairs and during the curing period. Concrete with defects which affect the strength of the member or with excessive honeycombs will be rejected, or the defects shall be corrected as directed at no additional cost to the OWNER.

2. Class 1, Ordinary Surface Finish: The Class 1, Ordinary Surface Finish shall be for surfaces not permanently exposed to public view or for areas to receive other finish such as painting or ceramic tiles, if specified. Immediately following the removal of forms, fins and irregular projections shall be removed from all surfaces except from those which will not be exposed to view after construction or are not to be waterproofed. Cavities produced by form ties and all other holes, honeycombed spots, broken corners or edges and other defects shall be thoroughly cleaned and, after having been kept saturated with water, shall be pointed and trued with a mortar of cement and fine aggregate mixed in the proportions used in the concrete being finished. Mortar used in pointing shall be not more than one hour old. Exposed surfaces not protected by forms shall be struck off with a straightedge and finished with a wood float to a true and even surface. Use of additional mortar to provide a grout finish will not be permitted.

3. Class 2, Rubbed Finish: The Class 2 Rubbed Finish shall be for surfaces that are permanently exposed to public view. After removal of forms, rubbing of concrete shall be started as soon as its condition will permit. Immediately before starting this work, concrete shall be kept thoroughly saturated with water. Sufficient time shall elapse before the wetting down to allow mortar used in pointing rod holes and defects to thoroughly set. Surfaces to be finished shall be rubbed with a medium coarse carborundum stone using a small amount of mortar on its face. Mortar shall be composed of cement and fine sand mixed in proportions used in the concrete being finished. Rubbing shall be continued until all form marks, projections and irregularities have been removed, all voids filled and a uniform surface obtained. Paste produced by this rubbing shall be left in place. After all concrete above the surface being treated has been cast, the final finish shall be obtained by rubbing with a fine carborundum stone and water until the entire surface is of a smooth texture and uniform color. After final rubbing is complete, the surface shall be left free from all unsound patches, paste, powder and objectionable marks.

4. Class 2A, Special Surface Finish: The Class 2A, Special Surface Finish will be allowed as an alternate to the Class 2, Rubbed Finish. When the Special Surface Finish is used, it shall be used throughout the project in lieu of the Class 2, Rubbed Finish. Application of the Special Surface Finish shall not be started until all other work which might mar the surface finish is complete and until finishing operations can be carried out continuously on a structure. The same

materials and methods shall be used for all surfaces on the project given this Special Surface Finish.

- B. Unformed Surfaces: In cold weather, the air temperature in areas where concrete is being finished shall not be less than 50 degrees F. In hot windy weather when the rate of evaporation of surface moisture, as determined by methodology presented in ACI 305R, may reasonable be expected to exceed 0.2 pounds per square foot per hour; coverings, windbreaks, or fog sprays shall be provided as necessary to prevent premature setting and drying of the surface. The dusting of surfaces with dry materials or the addition of water during finishing will not be permitted. Finished surfaces shall be plane, with no deviation greater than 1/4 inch when tested with a 10 foot straightedge. Floor tolerance measurements shall be made as soon as possible after finishing. When forms or shoring is used, the measurements shall be made prior to their removal. Surfaces shall be pitched to drains.
1. Rough Slab Finish: Slabs to receive fill or mortar setting beds shall be screeded with straightedges immediately after consolidation to bring the surface to the required finish level with no coarse aggregate visible.
 2. Float Finish: Slabs to receive a steel trowel finish and slabs, where indicated, shall be given a float finish. Screeding shall be followed immediately by darbying or bull floating before bleeding water is present, to bring the surface to a true, even plane. After the concrete has stiffened to permit the operation and the water sheen has disappeared, it shall be wood floated. Concrete that portrays stickiness shall be finished with a magnesium float in lieu of a wood float, and left free of ridges and other projections.
 3. Trowel Finish: Slabs, where indicated, shall be given a trowel finish immediately following floating. Surfaces shall be trowelled to produce smooth, dense slabs free from blemishes including trowel marks. In lieu of hand finishing, an approved power finishing machine may be used in accordance with the directions of the machine manufacturer. A final hard steel troweling shall be done by hand.
 4. Broom Finish: After floating, slabs, where indicated, shall be lightly trowelled, and then broomed with a fiber bristle brush in a direction transverse to that of the main traffic.
 5. Abrasive Aggregate Finish: After wood floating, slabs, where indicated, shall be given a nonslip abrasive aggregate finish. Abrasive aggregate shall be uniformly sprinkled over the surface at a rate of not less than 1/4 pound per square foot. The surface shall be steel-trowelled to a smooth, even finish of uniform texture. Immediately after curing, the abrasive aggregate shall be exposed by steel brushing, rubbing with an abrasive stone, or sandblasting.

3.9 Curing and Protection:

A. General: All concrete shall be cured by an approved method for the period of time given below:

Concrete with Type I, or Type II cement 7 days

Immediately after placement, concrete shall be protected from premature drying, extremes in temperatures, rapid temperature change, mechanical injury and injury from rain and flowing water. Air and forms in contact with concrete shall be maintained at a temperature above 50 degrees F for the first three (3) days and at a temperature above 32 degrees F for the remainder of the specified curing period. Exhaust fumes from combustion heating units shall be vented to the outside of the enclosure and heaters and ducts shall be placed and directed so as not to cause areas of overheating and drying of concrete surfaces or create fire hazards. All materials and equipment needed for adequate curing and protection shall be available and at the site prior to placing concrete. No fire or excessive heat shall be permitted near or in direct contact with the concrete at any time. Curing shall be accomplished by any of the following methods, or combination thereof, as approved.

B. Moist Curing: Concrete to be moist-cured shall be maintained continuously wet for the entire curing period. If water or curing materials used stains or discolors concrete surfaces which are to be permanently exposed, the concrete surfaces which are to be permanently exposed, the concrete surfaces shall be cleaned. When wooden forms are left in place during curing, they shall be kept wet at all times. If the forms are removed before the end of the curing period, curing shall be carried out as on unformed surfaces, using suitable materials. Horizontal surfaces shall be cured by ponding, by covering with a 2 inch minimum thickness of continuously saturated polyethylene-coated burlap or saturated burlap.

C. Membrane Curing: Membrane curing shall not be used on surfaces that are to receive any subsequent treatment depending on adhesion or bonding to the concrete. Curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. Surfaces shall be thoroughly moistened with water and the curing compound shall be applied to slab surfaces as soon as the bleeding water has disappeared, with the tops of joints being temporarily sealed to prevent entry of the compound and to prevent moisture loss during the curing period. Compound shall be applied in a one-coat continuous operation by mechanical spraying equipment, at a uniform coverage in accordance with the manufacturer's printed instructions. Concrete surfaces which have been subjected to rainfall within three (3) hours after curing compound has been applied shall be resprayed by the method at the coverage specified. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic, and from other sources of abrasion and contamination during the curing period.

3.11 Concrete Compressive Strength: The average compressive strength for Cast-In-Place P.C. Concrete shall be as follows:

Item	28 Day Compressive Strength (PSI)	Structural Class
Cast-in-Place Structural Concrete, Meter Vaults, Sidewall Repairs, Gen. Slab, etc.	4,000	A
Concrete Pavement, Parking, etc.	3,500	A
Sidewalks, Equipment and Valve Pads, etc.	3,000	M
Fence Posts, Thrust Blocking, etc.	1,800	R

- END OF SECTION -

CITY OF PINEVILLE, LOUISIANA
RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 4 - MASONRY

Section 04200 - UNIT MASONRY

SECTION 04200UNIT MASONRYPART 1 – GENERAL

1.1 Scope: Provide all labor, materials, equipment, and services required to furnish and install reinforced concrete masonry unit (CMU) walls for the sewer pump station operational floor addition. The wall system shall consist of fully reinforced, solid-grouted CMU walls with a continuous reinforced top bond beam, constructed in accordance with these specifications and the Drawings. All CMU walls shall be laid in running bond.

1.2 Referenced Standards:

ASTM C90 - Loadbearing Concrete Masonry Units

ASTM C270 - Mortar for Unit Masonry

ASTM C476 - Grout for Masonry

ASTM C404 - Aggregates for Masonry Grout

ASTM A615 / A706 - Standards for Steel Reinforcement (Rebar)

Masonry Society 402 - Building Code Requirements for Masonry Structures

Masonry Society 602 - Specification for Masonry Structures

ASCE/SEI 7 - Minimum Design Loads for Buildings and Other Structures

International Building Code as adopted by the City of Pineville, Louisiana.

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples And Project Data.

1.4 Quality Assurance: Masonry work shall be performed by installers experienced in reinforced masonry construction. Construct masonry in accordance with referenced Standards and accepted industry practice. All CMU walls shall be laid in running bond.

1.5 Delivery, Storage, And Handling: Store masonry materials off the ground and protect from contamination, moisture intrusion, and damage.

PART 2 – PRODUCTS

2.1 Concrete Masonry Units: ASTM C90 loadbearing CMU with nominal size 8 inches by 8 inches by 16 inches. Use normal-weight units suitable for solid grouting. The minimum compressive strength shall be 1,900 psi net area.

2.2 Mortar: Use ASTM C270 Type S mortar. Mortar shall be proportioned in accordance with ASTM C270.

2.3 Grout: Grout shall comply with ASTM C476 and The Masonry Society 602. Provide coarse grout for all CMU cells unless congestion requires fine grout. All CMU cells shall be fully grouted solid. Cement shall be ASTM C150 Type I or Type II Portland Cement. Fine aggregate shall be ASTM C404 natural sand. Coarse aggregate shall be ASTM C404, 3/8-inch maximum size. Water shall be clean and potable. Plasticizers are permitted. No calcium chloride or chloride-based admixtures shall be used. Air-entraining admixtures are not permitted. The grout mix shall consist of one part Portland cement, two to three parts sand, and one to two parts 3/8-inch coarse aggregate, with water added to achieve the specified slump. The minimum compressive strength shall be 3,000 psi at 28 days. The slump at placement shall be 8 to 11 inches. Grout shall be flowable, non-segregating, and capable of completely filling CMU cells.

2.4 Reinforcement: Reinforcing bars shall be ASTM A615 Grade 60. Reinforcement size, spacing, and location shall be as indicated on the Drawings.

2.5 Bond Beams: Provide a continuous CMU bond beam at the top of all CMU walls. The bond beam shall be fully grouted solid. Bond beam reinforcement and anchorage shall be as shown on the Drawings.

2.6 Control Joints: Provide full-height control joints at all locations where new CMU abuts existing CMU construction. Control joints shall extend from footing to top bond beam and permit differential movement between new and existing construction. Reinforcement shall discontinue across control joints. Seal joints with an elastomeric, chemical-resistant sealant compatible with masonry and wastewater environments.

PART 3 – EXECUTION

3.1 Examination: Verify foundations, dowels, dimensions, and conditions prior to masonry installation.

3.2 Installation: Lay CMU plumb, level, and in running bond. Accurately place reinforcement and secure against displacement. Tool mortar joints concave. All CMU walls shall be laid in running bond, offset by half the block length, with vertical reinforcement placed in cells as shown on the Drawings.

3.3 Grouting: Grout all CMU cells solid in accordance with The Masonry Society 602. Place grout in permitted lifts and consolidate to eliminate voids. Provide cleanouts where required and in-fill upon completion with CMU block closure.

3.4 Interface With Existing Construction: Construct new CMU walls independent of existing CMU except where detailed. Provide control joints at all new-to-existing CMU interfaces as shown on the Drawings.

3.5 Protection: Protect masonry from rain, freezing, rapid drying, and construction damage until cured.

END OF SECTION

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 5 - METALS

- Section 05500 - MISCELLANEOUS METALS
- Section 05650 - METAL BUILDING SYSTEM
- Section 05750 - STAINLESS STEEL HATCHES WITH SAFETY GRATES

SECTION 05500MISCELLANEOUS METALSPART 1 - GENERAL

1.1 Scope: This Section covers miscellaneous manufactured metal and shop built items not covered elsewhere.

1.2 Applicable Publications: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. Federal Specifications (Fed. Spec.):

TT-P-645	Primer, Paint, Zinc Chromate, Alkyd Type
TT-P-320D	Pigment, Aluminum; Powder and Paste for Paint
TT-V-119D	Varnish, Spar, Phenolic Resin
FF-B-575C	Bolts, Hexagon and Square

B. American Society for Testing and Materials (ASTM) Publications:

A 123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
A 386	Zinc Coating (Hot-Dip) on Assembled Steel Products.
A 653	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvanized) by the Hot-Dip Process.

C. American Welding Society (AWS) Publication:

D1.1	Structural Welding Code - Steel
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D. Military Specifications (mil spec.)

MIL-C-18480A	Coating Compound, Bituminous, Solvent, Coal Tar Base (Docks) and AM3
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1.3 General Requirements: The CONTRACTOR shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123, A 386, or A 623, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

1.4 Dissimilar Materials: Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, the surfaces shall be protected as covered in paragraph 3.4 Protection of Aluminum contained herein.

1.5 Submittals: Submit shop drawings, etc., in accordance with Section 01340 - Shop Drawings, Samples & Project Data. Shop drawings shall be submitted for the following items:

1. Anchors, bolts and fastening devices;
2. Miscellaneous hanging devices;
3. Pipe supports;
4. Pipe Bollards;

1.6 Workmanship: Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is indicated as being permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or metered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

1.7 Anchorage: Anchoring systems shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated shall include slotted inserts made to engage with the anchors, expansion shields, and power-driven fasteners when approved for concrete; toggle bolts and through bolts, lag bolts, and screws for wood.

PART 2 - PRODUCTS

2.1 Anchor Bolts and Fastening Devices: Provide Type 316 stainless steel anchor bolts of the size, length, and configuration shown on the Drawings for mounting equipment, appurtenances, and miscellaneous items to existing concrete structures or floors. Anchors shall be two-piece, post-installed mechanical anchors consisting of an expansion sleeve and threaded stud, designed for installation in drilled holes. Anchor bolts shall conform to ASTM F593, Alloy group 2 (Type

316 stainless steel) and shall be suitable for use in corrosive or wastewater environments. Anchors shall comply with anchorage provisions of ACI 318 and shall be installed in accordance with the manufacturer's recommendations. Acceptable manufacturers include Hilti, Simpson Strong-Tie, or approved equal.

2.2 Miscellaneous Hanging Devices: Provide mounting hardware, supports, and framing systems fabricated from Type 316 stainless steel for use in corrosive or wastewater environments. Materials shall include but not be limited to, metal framing channels, channel nuts, beam clamps, threaded rods, bolts, washers, and miscellaneous fittings and members as required for completed installations. Stainless steel fasteners shall conform to ASTM F593 (bolts, nuts, and screws) and ASTM F594 (nuts), Alloy Group 2 (Type 316). Metal framing channels and fittings shall conform to ASTM A240/A240M for stainless steel plate, sheet, and strip. Components shall be compatible with one another. Acceptable manufacturers include Unistrut, or approved equal.

2.3 Pipe Supports: Provide stainless steel threaded pipe supports with bolted saddles fabrication Type 316 stainless steel. Supports shall consist of a 12 inch square base plate for welding or bolting, a 6 inch Schedule 40 stainless steel riser, a 6 inch by 4 inch threaded reducing/adjustment coupling, and a 4 inch Schedule 80 stainless steel threaded pipe riser supporting a contoured bolted pipe saddle. Threaded rods, nuts, washers, and fasteners shall be Type 316 stainless steel conforming with ASTM F593-F594. Supports shall be rated for a minimum vertical service load of 40,000 lb per assembly. Fabrication and welding shall comply with AWS D1.6, and supports shall conform to MSS SP-58 and SP-69 for pipe hanger and support design, materials, and selection.

2.4 Access Frame and Hatches: Refer to Section 05750 – Stainless Steel Hatches with Safety Grates.

2.5 Pipe Bollards: Pipe bollards shall be 6” dia. Schedule 40 carbon steel (C.S.) to the length shown on the DRAWINGS. Bollards shall be filled with concrete and painted “safety yellow”.

PART 3 - EXECUTION

3.1 Examination:

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Beginning of installation means erector accepts existing conditions.

3.2 Preparation:

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate sections.

3.3 Installation:

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated on Drawings.
- D. Perform field welding in accordance with AWS D1.1.
- E. Obtain ENGINEER approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.4 Protection of Aluminum: Aluminum that will be in contact with grout or concrete shall be protected from galvanic or corrosive action by being given a coat of bituminous paint conforming to Mil. Spec. MIL-C-18480 or shall be given a coat of zinc-chromate primer and a coat of aluminum paint. Aluminum in contact with structural steel shall be protected against galvanic or corrosive action by being given a coat of zinc-chromate primer and a coat of aluminum paint. The zinc-chromate primer shall conform to Fed. Spec. TT-P-645. The aluminum paint shall consist of aluminum paste conforming to Fed. Spec. TT-P-320, thinner compatible with the varnish and spar varnish conforming to Fed. Spec. TT-V-119, mixed in proportion of two (2) pounds of paste to not more than one pint of thinner to one gallon of spar varnish. The paste, thinner, and varnish shall be field mixed.

3.5 Finishes:

- A. Unless otherwise specified, aluminum items shall have standard mill finish.
- B. Surfaces of ferrous metal except galvanized surfaces, shall be cleaned and shop coated with the manufacturer's standard protective coating unless otherwise specified. Surfaces of items to be embedded in concrete shall not be painted. Items to be finish painted shall be prepared according to manufacturer's recommendations or as specified.

3.6 Erection: Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.7 Erection Tolerances:

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Alignment: 1/4 inch.

- END OF SECTION -

SECTION 05650METAL BUILDING SYSTEMPART 1 – GENERAL

1.1 Scope: This Section covers the requirements for furnishing and installation of the metal roofing and wall panel system to be installed over the existing CMU building and the new CMU building addition required for this project including roof panels, wall panels, sub-framing, hat channels, anchorage to CMU, trim, flashings, continuous ridge and hip ridge vents, closures, complete gutter and downspout system, and all accessories required for a complete, watertight, wind and corrosion resistant system.

1.2 Referenced Standards:

International Building Code (IBC), latest edition.

American Society of Civil Engineers (ASCE) - ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures, latest edition.

American Iron and Steel Institute (AISI) - AISI Cold-Formed Steel Design Manual.

Metal panel manufacturer's published data and installation instructions.

1.3 Performance Requirements:

A. Metal roof and wall systems shall be designed to resist wind loads in accordance with ASCE 7, using the following minimum parameters:

1. Basic Wind Speed: 150 mph, 3-second gust
2. Risk Category: II
3. Exposure Category: C – Open terrain (approximately 20 acres), scattered obstructions <30 ft
4. Enclosure Classification: Enclosed
5. Directionality Factor (Kd): 0.85
6. Topographic Factor (Kzt): 1.0

B. Design shall include Components and Cladding (C&C) pressures for all roof and wall zones, including edge, corner, ridge, and hip zones.

C. Provide a continuous load path from panels through subframing and anchors into the CMU structure.

1.4 Exposure Category C – Definition:

- A. ASCE 7 Exposure C: Open terrain with scattered obstructions generally <30 ft, including flat open country, farmland, or similar terrain with relatively unobstructed conditions for at least 1,500 ft in the upwind direction.
- B. The building site is approximately 20 acres of open terrain with minimal obstructions, meeting the definition of Exposure Category C.
- C. All wind load calculations, panel pressures, and anchorage designs shall be based on Exposure C conditions.

1.5 Submittals:

- A. Contractor shall provide stamped engineered drawings and calculations by a Professional Engineer licensed in Louisiana, including:
 - 1. Panel layout, hat channel sizing/spacing, anchorage to CMU, fastener schedules, ridge and hip vent details, and load paths.
 - 2. Wind load calculations per ASCE 7, including MWFRS and C&C pressures.
 - 3. Manufacturer product data for all panels, trim, vents, closures, fasteners, anchors, and sealants, including PVDF/Kynar 500® coating specifications.
 - 4. Installation details and fastener schedules for field, edge, corner, ridge, and hip zones.
- B. Submittals must state:
 - 1. Exposure Category: C
 - 2. Basis of Exposure: approximately 20-acre open site
 - 3. Applicable ASCE 7 edition
 - 4. Design Wind Speed: 150 mph

1.6 Quality Assurance:

- A. Manufacturer shall have minimum 5 years experience with high-wind, PVDF/Kynar-coated metal panel systems.
- B. Installer shall be experienced in hurricane-rated and corrosion-resistant metal roof and wall systems.

PART 2 – PRODUCTS

2.1 Manufacturers: Roof panels, wall panels, trim, ridge vents, hip ridge vents, closures, and accessories shall be from the same manufacturer. Substitutions require written approval.

2.2 Wall Panels:

- A. Profile: R-Panel
- B. Material: Galvalume steel with factory-applied PVDF/Kynar 500 coating.
- C. Gauge: 26 ga.
- D. Finish: Chemically resistant PVDF/Kynar coating.
- E. Orientation: Vertical.

2.3 Roof Panels:

- A. Profile: R-Panel
- B. Material: Galvalume steel with factory-applied PVDF/Kynar 500 coating.
- E. Gauge: 24 ga.
- F. Finish: Chemically resistant PVDF/Kynar coating.
- E. Roof Slope: 4:12 minimum.

2.4 Hat Channels (Subframing):

- A. Galvanized cold-formed steel hat channels.
- B. Minimum Thickness: 16 ga. unless otherwise engineered.
- C. Spacing and orientation per stamped engineering drawings.

2.5 Ridge and Hip Ridge Vents:

- A. Continuous ridge vent and continuous hip ridge vent systems.
- B. Manufacturer: Same as roof panels.
- C. Material and Gauge: 24 ga, matching roof panels with PVDF/Kynar 500 coating.

D. Rated for 150 mph wind loads, including internal baffles and closures compatible with R-panel profile.

E. Provide continuous ridge and roof ventilation with a minimum Net Free Ventilating Area (NFVA) of 1:150 of total roof area, with approximately 50 percent of NFVA at the ridge and the remainder at continuous eave or low-level intake vents. Ridge vent assemblies shall be manufacturer-rated, profile-matched to the metal roofing system, and incorporate external wind baffles, internal weather filters, and integral drainage paths, installed over continuous underlayment to resist wind-driven rain and moisture intrusion under high-wind or hurricane conditions.

2.6 Trim and Flashings:

A. All corners, eaves, rakes, ridges, hips, and exposed edges shall be covered with manufacturer-supplied metal components of the same gauge and PVDF/Kynar coating as adjacent panels.

B. Wall Trim: 26 ga minimum.

C. Roof Trim: 24 ga minimum.

D. Trim shall be mechanically fastened and sealed; field-fabricated trim is not permitted.

2.7 Fasteners and Anchors:

A. Corrosion-resistant fasteners with sealing washers.

B. Masonry anchors approved for CMU and designed for required wind loads.

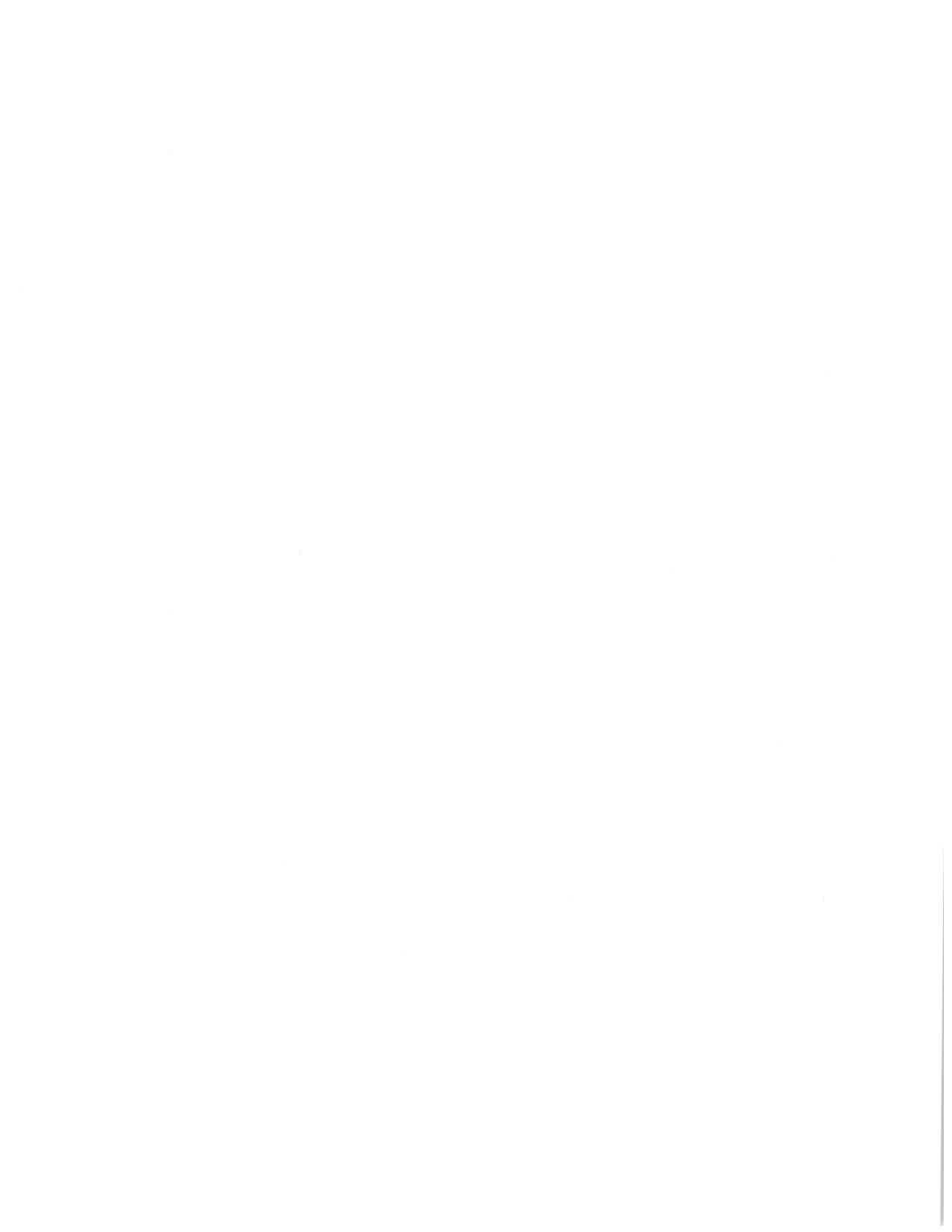
C. Type, size, and spacing per stamped engineering drawings.

2.8 Gutters and Downspouts: Provide a complete metal gutter and downspout system fabricated from pre-finished galvanized steel to match adjacent metal panels. Gutters shall be 7-inch K-style, formed from 24-gauge steel to match the roof panel gauge. Downspouts shall be 4-inch square, fabricated from 26-gauge steel to match wall panel gauge. Furnish factory-formed miters, end caps, outlets, elbows, and accessories as required for a complete system. Support gutters with steel gutter straps or hangers spaced not more than 24 inches on center, securely fastened to roof framing or fascia. Attach downspouts to wall panels or structure using pre-finished steel straps spaced not more than 4 feet on center. Fasteners shall be corrosion-resistant and color-matched. Install system to provide positive drainage and prevent leakage, deformation, or corrosion. Coating and finish shall match R panels.

PART 3 – EXECUTION

- 3.1 Examination: Verify CMU walls are sound and suitable for anchorage. Anchors shall be installed in solid grouted CMU or bond beams.
- 3.2 Installation: Install hat channels plumb and aligned per engineering. Anchor hat channels to CMU per stamped drawings. Install wall and roof panels per manufacturer instructions and engineered fastening patterns. Provide increased fastener density at edges, corners, ridges, hips, and eaves. Install continuous ridge and hip ridge vents with mechanical fastening. Adhesive-only attachment is not permitted.
- 3.3 Trim and Edge Protection: Cover all corners, eaves, ridges, hips, and exposed edges with same manufacturer trim and flashings with PVDF/Kynar coating. Ensure trim is mechanically fastened and sealed to resist wind-driven rain and corrosive gases.
- 3.4 Field Quality Control: Verify compliance with approved stamped drawings. Correct deficiencies prior to completion.

END OF SECTION



SECTION 05750STAINLESS STEEL HATCHES WITH SAFETY GRATESPART 1 - GENERAL

1.1 Scope: Provide and install 316 stainless steel access hatches in existing floors of the sewer pumping station and elsewhere as shown on the Drawings. Hatches shall include safety grates covering the full opening when doors are open and coated safety orange, automatic hold-open arms with red vinyl grip and stainless steel compression springs, flush drop handles and watertight slamlock with staple for padlock.

1.2 References:

- A. ASTM A240/A240M, ASTM A167 – Stainless steel material standards.
- B. OSHA 1910.23, 1910.28, ANSI/ASSE A1264.1 – Safety requirements.
- C. IBC Section 1607 – Pedestrian live load requirements.

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples and Project Data.

PART 2 – PRODUCTS

2.1 Materials: Hatch panels, frames, hinges, hold-open arms, slamlock: Type 316 stainless steel, uncoated. Grates shall be Type 316 stainless steel, safety-orange coated. Surface preparation per manufacturer to ensure coating adhesion. All welds shall be continuous and ground smooth.

2.2 Hatch Design:

- A. Perimeter flange: minimum 6” wide for mounting on existing floors.
- B. Doors hinged to open fully; safety grates pivot/swing opposite hinges to provide protection on all four sides.
- C. Automatic hold-open arm with red vinyl grip and stainless steel compression springs.
- D. Flush drop handles.
- E. Watertight slamlock with padlock staple.
- F. Concrete anchors: 1/2” stainless steel, 24” O.C., min. 4 ½” from edge of opening to hole center.

G. Contractor shall verify all dimensions in the field prior to fabrication.

2.3 Load Rating:

A. Rated for minimum 300 psf pedestrian live load per IBC Section 1607.

B. Grates, hold-open arms, and frames shall support load without permanent deflection.

C. Provide manufacturer load test certification.

2.4 Manufacturer: U.S.F. Fabrication, Inc., Hialeah, Florida, or approved equal.

PART 3 – EXECUTION

3.1 Install per manufacturer instructions and verified field dimensions. Ensure unobstructed operation of doors, grates, hold-open arms, handles, and slamlock. Inspect welds and fasteners for compliance with material, load, and safety requirements. Comply with OSHA and ANSI fall protection standards.

CITY OF PINEVILLE, LOUISIANA
RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 8 - DOORS AND WINDOWS

Section 08110 - FRP DOORS AND FRAMES

SECTION 08110FRP DOORS AND FRAMESPART 1 - GENERAL

1.1 Scope: Furnish and install factory-assembled fiberglass-reinforced plastic (FRP) doors and matching FRP frames, complete with gasketing, accessories, and stainless steel hardware, including hinges, lockset, deadbolt, push plates, closers, sweeps, and necessary reinforcements.

1.2 References:

ANSI/BHMA hardware standards (Grade 1 where applicable)

Manufacturer FRP technical data showing corrosion resistance to H₂S, high humidity, and sewer gases.

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples and Project Data.

1.4 Quality Assurance: FRP manufacturer must have minimum 5 yrs experience in wastewater/sewer applications. Installer must be experienced in industrial FRP systems.

1.5 Delivery, Storage, Handling: Store materials flat, dry, indoors, protected from UV until installation.

PART 2 – PRODUCTS

2.1 Manufacturers: Chem-Pruf Industrial FRP Doors; ARA Industrial FRP; Special-Lite FRP Industrial Series; or approved equal FRP industrial door manufacturer.

2.2 Solid-Core FRP Door Slab:

A. Construction:

1. 1-3/4" thick FRP door, corrosion-resistant resin system.
2. Face Sheets: molded FRP skins, smooth or textured, factory gel-coat.
3. Core: solid closed-cell polyurethane, phenolic, or proprietary closed-core FRP foam (no voids, no wood blocking, non-absorptive).
4. Full perimeter sealed edges.
5. Factory-installed stainless steel reinforcement at hardware locations.

B. Performance: Shall not warp, rust, delaminate, or absorb moisture. Chemically resistant to hydrogen sulfide, moisture, cleaning agents. Suitable for continuous wet/damp environments, sewer gas exposure.

2.3 FRP Frame (Primary Revision):

A. Frame Material: Structural FRP pultruded profiles or molded FRP frame sections manufactured for corrosive environments. Minimum wall thickness: 3/16". FRP frame color and finish to match with door.

B. Reinforcement:

1. Stainless steel (316) reinforcement plates inserted inside the FRP frame at:

- a. Hinges (full height reinforcement for continuous hinge).
- b. Lock/latch strikes.
- c. Deadbolt strikes.
- d. Door closer shoe/plate locations.

2. Reinforcement shall be fully encapsulated and non-exposed.

C. Anchorage: Provide factory-supplied stainless anchor tabs for CMU/concrete/wood walls. All fasteners and anchors shall be 316 stainless.

D. Frame: 3-piece knock-down FRP frame for retrofit into concrete block or concrete openings.

E. Accessories: FRP sill extension or threshold support. FRP drip edge.

2.4 Gasketing, Seals & Thresholds:

A. Perimeter Gasketing: EPDM continuous, replaceable, compression type. Mount using stainless fasteners to FRP frame.

B. Door Bottom Sweep: EPDM blade sweep with stainless retainer. Automatic drop seal (stainless internal components only).

C. Threshold: FRP or 316 stainless steel threshold with sealant and stainless steel anchors.

2.5 Stainless Steel Hardware:

A. General Requirements: Exposed hardware components shall be 316 stainless steel. Screws, hinge fasteners, strike fasteners, through-bolts shall be 316 SS.

B. Hinges: Full-height 316 stainless continuous hinge.

- C. Lockset: ANSI/BHMA Grade 1 heavy-duty cylindrical or mortise lockset. All exterior trim and exposed components shall be 316 SS. Keying per Owner. Provide Owner four (4) keys.
 - D. Deadbolt: Heavy-duty stainless steel deadbolt, Grade 1 with 1" throw. Strike mounted to FRP frame at stainless steel reinforced location.
 - E. Door Closer: Door closer shall be a surface closer 316 stainless steel with corrosion-resistant internal parts with adjustable backcheck and latch speeds. Mount to frame's stainless reinforcement.
 - F. Push Plates & Pulls: 316 stainless push plates and pull handles.
 - G. Kick Plates: 316 SS kick plate, 8" high.
 - H. Strikes, Latches & Miscellaneous: 316 SS reinforced strike plates. 316 SS door stop. Stainless silencers. Stainless drip cap.
 - I. Fasteners: All fasteners used on frame and hardware must be stainless and suitable for FRP mounting without crushing the FRP section.
- 2.6 Sealants: 100% silicone, polyurethane, or FRP-approved industrial sealant compatible with both FRP and stainless.
- 2.7 Warranty: Door and frame: 5-year against warping, delamination, corrosion.

PART 3 – EXECUTION

- 3.1 Examination: Verify openings are plumb, level, and sized for FRP frame tolerances.
- 3.2 Installation:
- A. Frames: Install FRP frame plumb and square. Anchor through factory reinforcement locations. Apply continuous sealant between wall and frame return. Shim only with non-corrosive materials.
 - B. Doors: Hang door per manufacturer torque requirements to avoid crushing FRP. Verify continuous hinge alignment for full seal contact.
 - C. Hardware: Install hardware with stainless fasteners only. Do not overtighten screws into FRP. Ensure lockset and deadbolt engage reinforced strike properly.
- 3.3 Sealing: Install perimeter gasketing continuous and free of gaps. Adjust sweep/threshold to ensure contact without drag.

3.4 Field Testing: Verify closure and latch alignment. Confirm gasketing compression all around.

3.5 Adjusting & Cleaning: Adjust closer and latching force. Clean FRP surfaces using non-abrasive cleaners. Replace any damaged components.

END OF SECTION

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 9 - FINISHES

Section 09900	-	PAINING AND COATINGS
Section 09950	-	WET PIT LINING

SECTION 09900PAINTING AND COATINGSPART 1 - GENERAL

1.1 Scope: This Section covers the requirements for painting

1.2 Referenced Standards: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. .ASTM F 1869 - Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

B. ASTM D 16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products.

C. ASTM D 4263 - Indicating Moisture in Concrete by the Plastic Sheet Method.

D. International Concrete Repair Institute (ICRI) Guideline No. 03732 - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

E. SSPC-SP 1 - Solvent Cleaning.

F. SSPC-SP 2 - Hand Tool Cleaning.

G. SSPC-SP 3 - Power Tool Cleaning.

H. SSPC-SP 5/NACE 1 - White Metal Blast Cleaning.

I. SSPC-SP 6/NACE 3 - Commercial Blast Cleaning.

J. SSPC-SP 10/NACE 2 - Near-White Metal Blast Cleaning.

K. SSPC-SP 13/NACE 6 - Surface Preparation of Concrete.

1.3 Definitions:

A. Definitions of Painting Terms: ASTM D 16, unless otherwise specified.

B. Dry Film Thickness (DFT): Thickness of a coat of paint in fully cured state measured in mils (1/1000 inch).

1.4 Submittals:

A. Submit manufacturer's product data for each coating, including generic description, complete technical data, surface preparation, and application instructions.

B. Color Samples: Submit manufacturer's color samples showing full range of standard colors.

C. Manufacturer's Quality Assurance: Submit manufacturer's certification that coatings comply with specified requirements and are suitable for intended application.

1.5 Quality Assurance:

A. Manufacturer's Qualifications:

1. Specialize in manufacture of coatings with a minimum of 10 years successful experience.
2. Able to demonstrate successful performance on comparable projects.
3. Single Source Responsibility: Coatings and coating application accessories shall be products of a single manufacturer.

B. Applicator's Qualifications:

1. Experienced in application of specified coatings for a minimum of 5 years on projects of similar size and complexity to this Work.
2. Applicator's Personnel: Employ persons trained for application of specified coatings.

1.6 Delivery, Storage, and Handling:

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:

1. Coating or material name.
2. Manufacturer.
3. Color name and number.
4. Batch or lot number.
5. Date of manufacture.
6. Mixing and thinning instructions.

B. Storage:

1. Store materials in a clean dry area and within temperature range in accordance with manufacturer's instructions.
2. Keep containers sealed until ready for use.

3. Do not use materials beyond manufacturer's shelf life limits.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.7 Environmental Requirements:

A. Weather:

1. Air and Surface Temperatures: Prepare surfaces and apply and cure coatings within air and surface temperature range in accordance with manufacturer's instructions.

2. Surface Temperature: Minimum of 5 degrees F (3 degrees C) above dew point.

3. Relative Humidity: Prepare surfaces and apply and cure coatings within relative humidity range in accordance with manufacturer's instructions.

4. Precipitation: Do not prepare surfaces or apply coatings in rain, snow, fog, or mist.

5. Wind: Do not spray coatings if wind velocity is above manufacturer's limit.

B. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with AWWA D 102.

C. Dust and Contaminants:

1. Schedule coating work to avoid excessive dust and airborne contaminants.

2. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

PART 2 - PRODUCTS

2.1 Manufacturers: Tnemec Company Incorporated, Dupont or prior approved equal. Bidders, desiring to use coatings other than those specified, shall submit their proposal in writing to the engineer a minimum of 15 days prior to bid date. Substitutions, which decrease the film thickness, the number of coats applied, change the generic type of coating or fail to meet the performance criteria outlined herein will not be approved.

PART 3 -EXECUTION

3.1 Examination: Examine areas and conditions under which coating systems are to be applied. Notify Engineer of areas or conditions not acceptable. Do not begin surface preparation or application until unacceptable areas or conditions have been corrected.

3.2 Protection of Surfaces Not Scheduled to be Coated: Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.3 Surface Preparation:

A. General: Prepare all surfaces in accordance with manufacturer's instructions. If the specified surface preparation varies from the manufacturer's recommendation, the more stringent method shall be employed. All surfaces shall be clean and dry prior to coating. All surfaces that are not to be coated shall be properly protected during surface preparation and coating installation.

3.4 Application:

A. Apply coatings in accordance with manufacturer's instructions.

B. Mix and thin coatings, including multi-component materials, in accordance with manufacturer's instructions.

C. Keep containers closed when not in use to avoid contamination.

D. Do not use mixed coatings beyond pot life limits.

E. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.

F. Uniformly apply coatings at spreading rate required to achieve specified DFT.

G. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.

H. Stripe paint with brush critical locations on steel such as welds, corners, and edges using specified primer.

3.5 Repair:

A. Materials and Surfaces Not Scheduled to be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.

B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces.

Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color.

C. Coating Defects: Repair in accordance with manufacturer's instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.6 Field Quality Control: Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of coating systems.

3.7 Finish Schedule:

A. Overhead Steel & Staircase:

1. Surface Preparation: Abrasive blast in accordance with SSPC-SP6.
2. Coating System:
 - 1st Coat Tnemec Series 66 Epoxoline 4.0-6.0 dry mils
 - 2nd Coat Tnemec Series 66 Epoxoline 4.0-6.0 dry mils

B. New Exterior CMU Walls:

1. Surface Preparation: Allow mortar to cure for 14 days. Level protrusions and mortar spatter.
2. Coating System:
 - 1st Coat Tnemec Series 130 Envirofill 60-80 Sq Ft/Gal
 - 2nd Coat Tnemec Series 156 Envirocrete 4.0-8.0 dry mils
 - 3rd Coat Tnemec Series 156 Envirocrete 4.0-8.0 dry mils

C. New Interior CMU Walls:

1. Surface Preparation: Allow mortar to cure for 14 days. Level protrusions and mortar spatter.
2. Coating System
 - 1st Coat Tnemec Series 130 Envirofill 60-80 Sq Ft/Gal
 - 2nd Coat Tnemec Series 66 Epoxoline 4.0-6.0 dry mils
 - 3rd Coat Tnemec Series 66 Epoxoline 4.0-6.0 dry mils

D. Existing Interior CMU Walls:

1. Surface Preparation: Clean to remove all soluble surface contaminants. Remove all loose paint by whatever means necessary. Feather-edge.
2. Coating System:
 - 1st Coat Tnemec Series 1026 Enduratone 2.0-3.0 dry mils
 - 2nd Coat Tnemec Series 1026 Enduratone 2.0-3.0 dry mils

E. Ductile Iron Pipe in Wetwell:

1. Surface Preparation: Abrasive blast in accordance with NAPF 500-03-04 Abrasive Blast Cleaning
2. Coating System:
Shop primer: Tnemec Series N69/N140 Epoxy 3.0-5.0 dry mils
1st Coat Tnemec Series 104 HS Epoxy 4.0-6.0 dry mils
2nd Coat Tnemec Series 104 HS Epoxy 4.0-6.0 dry mils

F. Ductile Iron Pipe Not in Wetwell:

1. Surface Preparation: Abrasive blast in accordance with NAPF 500-03-04 Abrasive Blast Cleaning
2. Coating System:
Shop primer: Tnemec Series N69/N140 Epoxy 3.0-5.0 dry mils
1st Coat Tnemec Series 66 Epoxoline 4.0-6.0 dry mils
2nd Coat Tnemec Series 66 Epoxoline 4.0-6.0 dry mils

G. Dry Pit Walls & Floors:

1. Surface Preparation: Abrasive blast or Water blast to remove all soluble surface contaminants and achieve surface profile equal to ICRI CSP 3
2. Coating System:
1st Coat Xypex Concentrate 1.5 lbs/sq yd
2nd Coat Xypex Modified 1.5 lbs/sq yd

H. Wetwell Lining: Section 09950 – Wet Pit Lining.

3.8 Cleaning: Remove temporary coverings and protection of surrounding areas and surfaces. Repair deficiencies in coating systems as determined by Engineer in accordance with manufacturer's instructions.

END OF SECTION

SECTION 09950WET PIT LININGPART 1 - GENERAL

1.1 Scope: This Section's intent is to provide minimum requirements of an installation of an ultra-high build, high strength, structural epoxy system; and the lining of the existing wet pit and adjoining areas exposed to municipal sanitary sewage by an applied and bonded application of high performance, 100% solids, ultra-high build, structural grade, applied fiber-reinforced-polymer (FRP) epoxy coating/lining system (Structural Epoxy). Contractor shall provide all labor, materials, equipment, incidentals, and quality requirements for concrete for surface preparation, repair or resurfacing, and ultra-high build, Structural Epoxy lining work to the entire interior surfaces of the structures as shown on drawings and specified herein.

A. Coordination:

1. Coordinate surface preparation of substrates to avoid later difficulty or delay in performing the Work of this Section.
2. Review installation procedures under other Sections and coordinate the installation of items that must be installed prior to application of the Structural Epoxy lining.
3. The Contractor shall coordinate with Engineer regarding the availability of work areas, completion times, safety, access, and other factors which can impact plant operations.

1.2 Referenced Standards: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American Concrete Institute, (ACI):

1. ACI 301 – Specifications for Structural Concrete

B. ASTM International, (ASTM):

1. ASTM C 868 – Standard Test Method for Chemical Resistance of Protective Linings
2. ASTM C 1583/1583M – Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)

3. ASTM D 4060 – Standard Test Method for Abrasion Resistance of Organic Linings by the Taber Abraser
4. ASTM D 4285 – Standard Test Method for Indicating Water or Oil in Compressed Air
5. ASTM D 4414 – Standard Practice for Measurement of Wet Film Thickness by Notch Gages
6. ASTM D 7682 – Standard Test Method for Replication and Measurement of Concrete Surface Profiles Using Replica Putty
7. ASTM F 2414 – Standard Practice for Sealing Sewer Manholes Using Chemical Grouting
8. ASTM C 1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill

C. International Concrete Repair Institute, (ICRI):

1. Guideline No. 310.1R – Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
2. Guideline No. 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealer, Linings, and Polymer Overlays

D. NACE International, (NACE):

1. NACE SP0188 – Standard Practice for Discontinuity (Holiday) Testing of Protective Linings
2. NACE No. 6/SSPC-SP13 – Surface Preparation of Concrete

E. Occupational Safety and Health Administration, (OSHA):

1. Safety and health Standards (29 CFR 1910/1926)

F. SSPC: The Society for Protective Coatings, (SSPC):

1. SSPC-SP13/NACE No. 6 – Surface Preparation of Concrete
2. SSPC-Guide 12 – Guide for Illumination of Industrial Painting Projects

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples And Project Data.

- A. Product Data Sheets: Copies of current technical data for each component specified and applied as outlined in this Section.
- B. Safety Data Sheets: Copies of current SDS for any materials brought on-site including all clean-up solvents, repair or resurfacing mortars and lining materials.
- C. Performance Testing Reports: Copies of test data for the entire physical, chemical, and permeation properties listed herein and as outlined within this Section.
- D. Installation Instructions: Manufacturer's written installation instructions for the materials specified in this Section.

1.4 Quality Assurance:

A. Applicator Qualifications:

- 1. Applicator shall establish quality control procedures and practices to monitor phases of surface preparation, storage, mixing, application, and inspection throughout the duration of the project. Contractor to provide a person whose dedicated responsibilities will include quality control of the Structural Epoxy linings.
- 2. Applicator's quality control procedures and practices must include the following items:
 - a. Training of personnel in the proper surface preparation requirements.
 - b. Training of personnel in the proper storing, mixing, and application and quality control testing of the Structural Epoxy linings.
 - c. If spraying, training of personnel with the spray equipment to ensure proper film build, film quality, and ratio control.

B. Mock-Ups:

- 1. Prior to the installation of the Structural Epoxy lining and auxiliary system components, but after Engineer's approval of the Samples and Shop Drawings, install 25 square foot (5' x 5') stepped-back mock-up of the systems showing surface preparation and each system component in an area selected by Engineer to show representative installation of the Work.
- 2. Engineer shall approve the mock-up before the start of Work.
- 3. Retain and protect mock-ups during construction as one standard for judging completed corrosion protection lining Work. Do not alter mock-ups after approval by Engineer.

4. Contractor shall build as many mock-ups as required to achieve Engineer's acceptance of the corrosion protection lining.

5. The approved mock-up shall be considered the acceptable minimum standard of quality.

6. Any corrosion protection lining Work that proceeds without approved mock-ups will not be accepted by the Engineer and removed at no cost to the Owner.

C. Performance Criteria: Structural Epoxy lining shall be capable of withstanding under constant exposure to raw wastewater, permeation from hydrogen sulfide and other sewer gases, and attack from organic acids generated by microbial sources with no adverse effects; cured film at specified thickness must withstand negative side film forces from inflow and infiltration. Products must have sufficient field history and accelerated laboratory testing to substantiate product viability for these exposures.

D. Source Quality Control: Provide each component of Structural Epoxy lining produced by a single manufacturer, including recommended repair mortar, repair overlay (resurfacer), joint sealant, lining (coating) materials.

E. Reference Standards: Comply with applicable provisions and recommendations of all standards listed in this Section.

1.5 Product Delivery, Storage, And Handling:

A. Delivery of Materials:

1. Deliver material in manufacturer's original, unopened and undamaged packages.
2. Clearly identify manufacturer's, brand name, contents, color, batch number, and any personal safety hazards associated with the use of or exposure to the materials on each package.
3. Packages showing indications of damage that may affect condition of contents are not acceptable.

B. Storage of Materials:

1. Materials shall be stored in accordance with manufacturer's recommendations in enclosed structures and shall be protected from weather and adverse temperature conditions. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life as defined by the manufacturer shall be removed promptly from the site. Store all materials only in area or areas designated by the Engineer solely for this purpose.

2. Store in original packaging under protective cover and protect from damage.
3. Stack containers in accordance with manufacturer's recommendations.

C. Handling of Materials: Handle materials in such a manner as to prevent damage to products or finishes.

1.6 Job Conditions:

A. Environmental Requirements:

1. Proceed with Work only when temperature and moisture conditions of substrates, air temperature, relative humidity, dew point and other conditions comply with the Structural Epoxy lining manufacturer's written recommendations and when no damaging environmental conditions are forecasted for the time when the material will be vulnerable to such environmental damage.
2. Maintain substrate temperature and ambient temperature before, during and after installation above 45°F (8°C) and rising in accordance with Structural Epoxy lining material manufacturer's instructions.
3. Provide adequate ventilation during instillation and full curing periods of the Structural Epoxy lining.
4. Structural Epoxy lining shall not be applied when ambient air temperature is within 5°F (3°C) of the dew point.
5. Structural Epoxy lining shall not be applied when relative humidity is outside of material manufacturer's recommendations. Do not prepare surfaces or apply materials in rain, snow, fog, mist, or otherwise inclement weather as per material manufacturer's instructions.

B. Dust and Contaminants: Protect work and adjacent areas from excessive dust and airborne contaminants during Structural Epoxy lining application and curing. Schedule Work to avoid excessive dust and airborne contaminants.

PART 2 – PRODUCTS

2.1 Materials:

A. Products and Manufacturer:

1. Materials specified are those that have been evaluated for the specific service. Products of Epoxytec LLC (a Tnemec company, www.tnemec.com, (1-800-863-6321) www.epoxytec.com are specified as a standard of quality and basis of design. The specified basis of design is intended to provide the longest service life possible, lowest life cycle cost, and most sustainable solution.

2. Bidders, desiring to use coatings other than those specified, shall submit their proposal in writing to the engineer a minimum of 15 days prior to bid date. Substitutions, which decrease the film thickness, the number of coats applied, change the generic type of coating or fail to performance of the specified materials will not be approved for the project.

B. Contractor shall provide all accessory components, as specified or recommended by the manufacturer for optimal application of the Structural Epoxy lining system's adhesion to substrate and long-term service performance.

C. Hydraulic Water Plug:

1. Active leak control materials are to be utilized for I&I abatement, to stop leaks, running water, infiltration, and other water stop needs. Material must be a quick setting, hydraulic cement compound designed for minor patching, and as a leak stopper and water plug which stops running water and/or seepage through concrete. Materials must be designed to set rapidly, in dry powder form, with no prior mixing of water needed (if necessary), to apply directly to active leaks under hydrostatic pressure in accordance with the manufacturer's recommendations.

D. Chemical Grout:

1. Sanitary sewer grade chemical grouts shall be urethane-based, and formulated specifically for use in grouting pre-cast barrel joints, brick and CMU structures, and/or pipe penetrations and pinholes to stop aggressive flowing leaks.

2. Chemical grout shall be Deneef Flex LV, Avanti AV-254 Gelseal or prior approved equal

E. Cementitious Repair Mortar:

1. Rapid-setting, cementitious repair mortar when concrete is deteriorated greater than a depth of 1/2-inch (12.7 mm) and when recommended by the Manufacturer to rehabilitate and restore concrete and provide level substrate for

application of the protective lining. Cementitious repair mortar shall be a rapid-setting, non-shrinking resurfacing material capable of spray-transfer. Material shall have similar CLTE properties as concrete.

2. Cementitious Repair Mortar shall be Tnemec Series 217 Mortarcrete, Epoxytec MortarTec Ceramico or prior approved equal.

F. Epoxy Cementitious Resurfacer:

1. Epoxy cementitious resurfacer shall be an epoxy-modified, aggregate reinforced material with for surfacing, patching and filling voids and bugholes in concrete. The material shall be suitable for the application down to 1/16 inch (1.6 mm) thickness and be capable of spray-transfer.

2. Epoxy cementitious resurfacer shall exhibiting high bond strength and high mechanical strengths. Initial set time occurs early (4 hours @ 77F) to allow for Structural Epoxy coating. The Epoxy cementitious resurfacer shall not require for any further preparation or conditioning within 36 hours (at 77F) to accept epoxy top coats.

3. Epoxy cementitious resurfacer be Tnemec Series N128 Mortarclad or prior approved equal.

G. Structural Epoxy Lining:

1. Structural Epoxy shall be available in both trowel-version and spray-version to assist with various application needs or applications in limited access areas or perform any touch-ups.

2. Structural Epoxy shall be 100% solids, highly thixotropic microfiber-reinforced, applied epoxy polycyclic polymer protective barrier material specifically designed to protect concrete and masonry surfaces in severe wastewater environments, including H₂S attack, while sealing inflow and infiltration (I&I).

3. Structural Epoxy is to provide protection from H₂S corrosion and seal from I&I with applied and bonded high build Structural Epoxy; Structural Epoxy film thickness specified herein is designed and intended for applied and bonded coating, delivering barrier protection lining with high mechanical strength and a reinforced film to bridge and seal against moisture vapor transmission (MVT), hydrostatic head pressure, fine root intrusion, and seal inflow and infiltration (I&I).

4. Structural Epoxy lining must be a verified technology of US Environmental Protection Agency's, Environmental Technology Verification Program for Infrastructure Rehabilitation Technologies (EPA ETV).

5. Structural Epoxy lining must be self-priming, able to be applied direct-to-concrete (DTC), requiring no primer.
6. Structural Epoxy lining must be able to bond to saturated-surface-dry (SSD) concrete, with moisture and relative humidity tolerances up 85% and capable to fully cure underwater.
7. Materials shall meet the following requirements:
 - a. CIGMAT CT-2 (ASTM D 7234 Pull-Off Method-Wet/Dry) Requirements: Exceeds the cohesive strength of the wet and dry concrete block substrates. Wet concrete blocks immersed 7 days in tap water and removed for 1 hour to achieve a saturated surface dry (SSD) condition prior to topcoating
 - b. ASTM C 579 Compressive Strength Requirement: Minimum 10,800 psi
 - c. ASTM D 790 Flexural Strength Requirement: Minimum 7600 psi
 - d. ASTM D 790 Modulus of Elasticity Requirement: Minimum 610,000psi
 - e. ASTM D 2240 Shore D Requirement: No less than 76
 - f. ASTM D 638 Tensile Strength Requirement: No less than 4400 tensile and 2% elongation at break
8. Epoxy lining shall be Tnemec/ Epoxytec CPP Sprayliner, Epoxytec CPP Trowel-Liner epoxy lining or prior approved equal.

PART 3 - EXECUTION

3.1 General:

- A. All work shall be in strict accordance with the specifications and recommendations including mixing, handling, storage, and application of all products as required and in accordance with manufacturer's published technical instructions, safety data sheets, including manufacturer's published PDS, design guidelines, and/or other written specifications.
- B. Contractor shall provide, erect, and maintain all required hoists, scaffolding, staging and planking, and perform all access related hoisting work required to complete the Work of this Section as specified.
- C. Contractor shall cover or otherwise protect finish work or other surfaces not being coated within the scope of this Section. Contractor shall erect and maintain protective tarps, enclosures and/or masking to contain debris, including dust or other airborne particles from surface preparation or application activities. This may include the use of dust or debris collection apparatus as required at no additional cost to Owner.

3.2 Examination:

- A. Contractor shall examine the areas and conditions under which the Structural Epoxy coating Work is to be performed in accordance with SSPC-SP13/NACE No. 6, and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work.
- B. Commencement of the Work of this Section shall indicate that the substrate and other conditions of installation are acceptable to the Contractor and his Applicator and will produce a finished product meeting the requirements of the Specifications. All defects resulting from accepted conditions shall be corrected by Contractor at his own expense.
- C. **Stopping Active Leaks:** After surface cleaning, any visible leaks or other water ingress shall be reported to the Engineer. Any water infiltration through minor leaks must be stopped using specified hydraulic cement water stop; should flows be aggressive, a chemical grout method shall be used. Surface and grouting material may require additional surface preparation prior to application of Structural Epoxy lining.
- D. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, coating installation should be scheduled when the temperatures are falling versus rising.

3.3 Preparation:

- A. Allow concrete to cure for a minimum of 28 days at 75°F (24°C) and with adequate air movement before installing the corrosion protection lining system.
- B. Surface preparation procedures shall be in accordance with NACE No. 6/SSPC-SP13 and ICRI Guideline No. 310.2.
- C. High-pressure water blast all surfaces with minimum 5000 psi and rotary nozzle and appropriate degreasers to remove all soluble surface contaminants.
- D. Remove all loose and poorly bonded concrete and mortar.
- E. Remove all existing coatings by whatever means necessary.
- F. Level or grind concrete substrates to produce a uniform and smooth surface, including removal of all sharp edges, ridges, form fins, and other concrete protrusions.
- G. Abrasive blast all surfaces to remove all insoluble surface contaminants, existing coatings and to achieve a surface profile equivalent to ICRI CSP 4 for surfaces to receive epoxy based materials and ICRI CSP 6 for surfaces to receive cementitious materials. **ABRASIVE BLASTING IS REQUIRED FOR THE PROJECT.**

H. Surface preparation of the substrate must be achieved immediately prior to utilizing any repair material and/or coating/lining material that will require bond to the substrate, re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

I. Metal Application: Remove all visible contaminants per SSPC-SP1. Prepare the surfaces in accordance with SSPC SP10 Near White Metal Blast Cleaning and to achieve a minimum 3.0 mil angular surface profile..

J. Chimney detail: Saw cut a ¼” x ¼” groove at the concrete metal casting interface. Fill to Flush with Structural Epoxy and carry the structural epoxy to completely coat the metal casting.

3.4 Application:

A. Structural Epoxy lining systems shall be installed when ambient air and surface temperature is above 45°F. The substrate temperature shall be at least 5°F (3°C) above the dew point. Condition the material between 70-80°F for 24 hours prior to use. Application when temperatures outside of this range will require written instruction from the Manufacturer and approval of the Engineer.

B. Application in direct sunlight and/or with rising surface temperatures is not advised, as this may result in blistering of the materials due to expansion of entrapped air or moisture in the concrete (induced outgassing). In such cases, it will be necessary to postpone the application until later in the day when the temperature of the substrate is falling or take precautionary steps as recommended by the Manufacturer. Concrete surfaces that have been in direct sunlight should be shaded for at least 24 hours prior to application. Consult the Manufacturer for application schedule guidelines specific to temperature conditions and possible sealer application recommendations to reduce outgassing.

C. Hydraulic Water Plug: Install Hydraulic cement water plug for low pressure active leaks and to repair all missing concrete and mortar at joints and other locations as necessary.

D. Chemical Grout: Install chemical grouts to stop aggressive flowing leaks.

1. Cure: Mixing and handling of all the chemical grout materials shall be in accordance with chemical grout manufacturer’s recommendations. Application of materials shall be by injection method according to chemical grout manufacturer recommendation and industry defined standard ASTM F 2414, using appropriate pressure to ensure no damage to the structure.

2. Re-Blast: All excess chemical grout must be removed from the surface by mechanical means.

E. Cementitious Repair Mortar: Apply Tnemec Series 217 cementitious repair mortar to:

1. All surfaces that have deteriorated a minimum of ½” and build to original grade.
2. Reprepare all surfaces in accordance with manufacturer’s instructions.

F. Cementitious Resurfacer: Apply Tnemec Series N128 Mortarclad or prior approved equal at an average thickness of 1/18” and to all surfaces that have exposed aggregate and less than ½” deterioration to achieve a uniformly smooth surface.

G. Structural Epoxy Lining: Apply Epoxytec CPP Sprayliner or Epoxytec CPP Trowel-Liner epoxy lining. Structural Epoxy coating to all interior surfaces of structure. Materials shall be applied and in accordance with Manufacturer’s written instructions as outlined in the product data sheet and application guide.

1. Thickness: Epoxy lining shall be applied to a minimum thickness of 150mils dry film thickness.

3.5 Field Quality Control, Inspection And Testing:

A. Contractor to perform the quality control procedures listed below in conjunction with the requirements of this Section.

B. Inspect all materials upon receipt to ensure that all are supplied by the approved Manufacturer.

C. Surface pH Testing: The pH of substrate will be measured using pH indicating paper or pH meter. Acceptable pH values shall be a minimum 9.0 as measured using color indicating pH paper with readable color calibrations and a scale at whole numbers or pH meter.

D. Surface Profile: Inspect and record substrate profile (anchor pattern) at least once every 5 vertical feet or every 100 square feet (9.3 square meters). If applying Structural Epoxy direct-to-concrete (DTC), surfaces shall be profiled equal to the CSP 4 amplitude as recommended by the coating manufacturer in accordance with ICRI Guideline 310.2 and SSPC-SP13/NACE No. 6; for Cementitious Repair Mortar work, surfaces shall be profiled equal to the CSP 6.

E. Provide verification of correct mixing of coating materials in accordance with the Manufacturer’s instructions.

F. Inspect and record that the "pot life" of coating materials is not exceeded during installation.

G. Verify curing of the coating materials in accordance with the Manufacturer's instructions.

H. Dry-Film Thickness:

1. Wet-Film Thickness shall be taken every two vertical feet (2 vf) or every 25 square feet (2.3 square meters) in accordance with ASTM D 4414 and recorded.
2. The Dry-Film Thickness can be determined using a surface area calculation for material consumption.

I. High-Voltage Holiday (Spark) Testing: Upon full cure, the installed lining system shall be checked by high voltage spark detection in accordance with NACE SP0188 and the Manufacturer's printed application guide to verify a pinhole-free surface. Areas which do not pass the spark detection test shall be corrected at no cost to the Owner.

J. Contractor is responsible for keeping the Engineer informed of all progress so that Engineer may provide additional quality control at his discretion.

K. Inspection by the Engineer or others does not absolve the Contractor from his responsibilities for quality control inspection and testing as specified herein or as required by the Manufacturer's instructions.

3.6 Acceptance Criteria:

A. All surfaces shall be prepared, applied, and tested in accordance with the specification and referenced standards herein.

3.7 Adjustments And Cleaning:

A. At the completion of the Work, Contractor shall remove all materials and debris associated with the Work of this Section.

B. Clean all surfaces not designated to receive Structural Epoxy coating. Restore all other work in a manner acceptable to Engineer.

C. All finished Structural Epoxy coating shall be protected from damage until Final Acceptance of the Work. Structural Epoxy coating damaged in any manner shall be repaired or replaced at the discretion of Engineer, at no additional cost to Owner.

END OF SECTION

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 11 - EQUIPMENT

- Section 11307 - SUBMERSIBLE SEWAGE PUMP SYSTEM
- Section 11360 - DRY PIT SUMP PUMP
- Section 11407 - PRESSURE TRANSMITTER SYSTEM

SECTION 11307SUBMERSIBLE SEWAGE PUMP SYSTEMSPART 1 - GENERAL

1.1 Description: This Section covers submersible pumping equipment and related appurtenances for the wastewater treatment plant Sewer Pumping Station No. 1. The CONTRACTOR shall furnish, install and place into operation, a complete submersible sewage pump systems as indicated on the Drawings and specified herein. The pump systems shall be complete with all specified equipment, and appurtenances.

1.2 Quality Assurance and Qualifications:

A. To assure unity of responsibility, the pumps, motors, motor starters and pump control systems shall be furnished by a single supplier. See Specification Section 16695 - Pump Control Systems. The CONTRACTOR and manufacturer shall assume responsibility for the satisfactory installation and operation of the entire pumping system including pumps, motors, starters and controls as specified.

B. The pumps covered by these Specifications are intended to be standard pumping equipment of proven ability as manufactured by a reputable manufacturer having long experience in the production of such pumps. The pumps furnished shall be designed, constructed and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed. Pumps shall be manufactured in accordance with the Hydraulic Institute Standards.

C. All equipment furnished under this Specification shall be new and unused, shall be the standard product of manufacturer having a successful record of manufacturing and servicing the equipment and systems specified herein for a minimum of five (5) years.

1.3 Design Data: Technical data and dimensions contained in the specifications and drawings for this contract are based on the use of Flygt pumping equipment. Should the Contractor provide a submittal that would require modification to the design, to a structure, hydraulic piping, electrical components, layout, controls, or other previously designed aspects of the project, he shall submit with his transmittal, additional design calculations and details of the modification. Any cost incurred by the Engineer for review of these modifications and the direct effect on other designed portions of the project and the implementation of alternate designs shall be borne by the Contractor. The Owner or Engineer will incur no additional costs for modifications or deviations from the original drawings and specifications as submitted by shop drawings, product data, or samples.

1.4 Submittals: Submit product data for specified equipment in accordance with provisions of Section 01340 - Shop Drawings, Samples, And Project Data and includes at least the following:

A. Shop and erection drawings showing all important details of construction, dimensions and anchor bolt locations.

B. Descriptive literature, bulletins, and/or catalogs of the equipment.

C. Data on the characteristics and performance of each pump. Data shall include performance curves, which show head, capacity, efficiency, NPSHR, submergence, brake horsepower and input KW based upon actual field tests on the pumps provided for this project. Curves shall be submitted on 8½" by 11" sheets, at as large a scale as is practical. Curves shall be plotted from no flow at shut off head to pump capacity at minimum specified TDH. Catalog sheets showing a family of curves will not be acceptable.

D. Complete master wiring diagrams, elementary or control schematics, including coordination with other electrical control devices operating in conjunction with the submersible sewage pump system shall be furnished for approval before proceeding with manufacture. Standard pre-printed sheets or drawings simply marked to indicate applicability to this contract will not be acceptable.

E. A list of the manufacturer's recommended spare parts to be supplied, with the manufacturer's current price for each item. Include gaskets, seals, etc. on the list. List bearings by the bearing manufacturer's numbers only.

F. Complete motor data including dimensional prints, wiring diagrams, etc.

G. A complete bill of material.

1.5 Operations and Maintenance Manuals: Complete operations and maintenance manuals shall be provided in accordance with Section 01730 - Operation And Maintenance Manual.

1.6 Warranty: Warranty shall be provided in accordance with Section 01740 - Warranties and Bonds. The pump manufacturer shall warrant the units being supplied to the OWNER against defects in workmanship and material for a pro-rated per the tables below. The warranty shall be in printed form and apply to all similar units and shall be as follows:

A. 5 year pro-rated

Warranty Period	Time after Startup of Pumping Equipment (months)	Manufacturer's Share of Cost of Repair (percent)
1	0-18	100%
2	19-39	50%
3	40-60	25%

1.7 Clog Free Guarantee: In addition to the warranty as stated above, the supplier of the pump and control system shall guarantee clog-free operation for a period of 24 months from the date of start-up. A certificate of guarantee shall be provided to the Owner on the day of start up with the local contact information and effective date. Should the impeller clog with typical solids and/or modern trash debris normally found in domestic wastewater during this period, an authorized representative shall either travel to the jobsite remove the pump, clear the obstruction and reinstall the pump at no cost or reimburse the Owner for reasonable cost to provide this service. A written report shall be provided to the Owner detailing the service call with pictures for verification purposes. Grinder pumps are not part of this guarantee.

1.8 Start-Up Services: A factory representative of each major component manufacturer, who has complete knowledge of proper operation and maintenance, shall be provided for one (1) day per station to instruct representatives of the OWNER and the ENGINEER on proper operation and maintenance. With the permission of the OWNER, this work may be conducted in conjunction

with the inspection of the installation and test run. If there are difficulties in operation of the equipment due to the manufacturer's design or fabrication or CONTRACTOR'S installations, additional service shall be provided to correct the difficulties at no cost to the OWNER.

1.9 Certificate of Compliance: The CONTRACTOR shall furnish a certificate indicating the pump system complies with the requirements indicated on the Drawings and Specifications. If the pump system does not comply with all of the requirements and was approved by the ENGINEER, the Certificate shall specifically indicate the requirements met and not met by the pump system.

PART 2 - PRODUCTS

2.1 General: The pumping units required under this Section shall be complete, including pumps and motors with proper alignment and balancing of the individual units. All parts shall be so designed and proportioned as to have liberal strength, stability and stiffness and to be especially adapted for the Work to be performed.

2.2 Pumps:

A. General: CONTRACTOR shall furnish and install submersible non-clog sewage pumps, a lift system for each pump consisting of guide bars, and upper, lower and intermediate guide brackets for each of the following pump stations:

B. Pump Operating Conditions:

Sewer Pumping Station No. 1	
Provide Three (3) Pumps Conforming to the Following:	
Design Flow/Pump	3,530 gpm
Design TDH	43'
Pump Design	Submersible Non-Clog
Min. Eff.	78%
Motor H.P. (max.)	35 H.P.
Service Voltage	460V, 3Ø
Pump Model	FLYGT NZ 3202 MT3-643

2.3 Pumps: The pumps shall be capable of handling raw, unscreened sewage. The pump shall be capable of passing a 3" sphere. (Flygt Corporation's N impeller is approved as an alternative to the 3" solids passage requirement). Pumps shall be supplied with a mating discharge connection and be capable of delivering the flow specified in the table above. The discharge connection elbow shall be permanently installed in the wet well along with the discharge piping. The pumps shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The pump and motor shall be non-overloading at any point on the curve. The pump, with its appurtenances and cable, shall be capable of continuous submergence

underwater without loss of watertight integrity to a depth of sixty five (65) feet. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring, or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor.

A. Pump Construction: Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be of stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.

B. Mating Surfaces: All mating surfaces where watertight sealing is required shall be machined and fitted with nitrile rubber O-rings. Fitting shall be such that sealing is accomplished by metal-to-metal contact between machined surfaces. This will result in controlled compression of nitrile rubber O-rings without requirement of a specific torque limit. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

C. Cable Entry Seal: The cable entry water seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall be comprised of dual cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the entry body containing a strain relief function, separate from the function of sealing the cable. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered acceptable.

D. Motors: The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class H insulation rated for 180°C (356°F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31. The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of pins, bolts, screws or other fastening devices used to locate or hold the stator and that penetrate the stator housing are not acceptable. The motor shall be designed for continuous duty while handling pumped media of up to 104°F. The motor shall be capable of no less than 30 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of aluminum. Three thermal switches shall be embedded in the stator end coils, one per phase winding, to monitor the stator temperature. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the motor control panel.

The motor service factor (combined effect of voltage, frequency and specific gravity) shall be 1.15. The motor shall have a voltage tolerance of +/- 10%. The motor shall be designed for continuous operation in up to a 40°C ambient and shall have a NEMA Class B maximum operating temperature rise of 80°C. A motor performance chart shall be provided

upon request exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. The chart shall also include data on motor starting and no-load characteristics.

Motor horsepower shall be sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.

E. Motor Cable Junction Chamber: The junction chamber shall be sealed off from the stator housing and shall contain a terminal board for connection of power and pilot sensor cables using threaded compression type terminals. The use of wire nuts or crimp-type connectors is not acceptable. The motor and the pump shall be produced by the same manufacturer.

F. Thermal Sensors: Each pump motor stator shall incorporate three thermal switches, one per stator phase winding and be connected in series, to monitor the temperature of the motor. Should the thermal switches open, the motor shall stop and activate an alarm. A float switch shall be installed in the seal leakage chamber and will activate if leakage into the chamber reaches 50% chamber capacity, signaling the need to schedule an inspection. The thermal switches and float switch shall be connected to a Mini CAS control and status monitoring unit. The Mini CAS unit shall be designed to be mounted in the pump control panel.

G. Pump Shaft: The pump and motor shaft shall be the same unit. The pump shaft shall be an extension of the motor shaft. Couplings shall not be acceptable. The shaft shall be ASTM A479 S43100-T stainless steel. Shaft sleeves will not be acceptable.

H. Mechanical Seals: Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide ring. The upper secondary seal, located between the seal chamber and the seal inspection chamber shall be a leakage-free seal. The upper seal shall contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide seal ring. The rotating seal ring shall have small back-swept grooves laser inscribed upon its face to act as a pump as it rotates, returning any fluid that should enter the dry motor chamber back into the lubricant chamber. All seal rings shall be individual solid sintered rings. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces are not acceptable. The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.

I. Shaft Seal Lubrication: Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion. The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit. The seal system shall not rely upon the pumped media for lubrication.

- J. Seal Leakage Chamber: A separate seal leakage chamber shall be provided so that any leakage that may occur past the upper, secondary mechanical seal will be captured prior to entry into the motor stator housing. Such seal leakage shall not contaminate the motor lower bearing. The leakage chamber shall be equipped with a float type switch that will signal if the chamber should reach 50% capacity.
- K. Bearings: The integral pump/motor shaft shall rotate on two bearings. The motor bearings shall be sealed and permanently grease lubricated with high temperature grease. The upper motor bearing shall be a single ball type bearing to handle radial loads. The lower bearing shall be a two row angular contact ball bearing to handle the thrust and radial forces. The minimum L₁₀ bearing life shall be 50,000 hours at any usable portion of the pump curve.
- L. Impeller: The impeller shall be of Hard-Iron™ (ASTM A-532 (Alloy III A) 25% chrome cast iron), dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The leading edges of the impeller shall be hardened to Rc 60 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impeller shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.
- M. Volute: The pump volute shall be a single piece grey cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be cast of Hard-Iron™ (ASTM A-532 (Alloy III A) 25% chrome cast iron) and provide effective sealing between the multi-vane semi-open impeller and the volute housing.
- N. Cable: The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The power cable shall be of a shielded design in which an overall tinned copper shield is included and each individual phase conductor is shielded with an aluminum coated foil wrap. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.
- O. Equipment Quality Standard and Permanent Identification: Stainless steel nameplates giving the name of the manufacturer, the rated capacity, head, speed, h.p., rpm and all other pertinent data shall be attached to each pump and motor.
- 2.4 Lifting Assembly: Refer to Section 13800 – Trolley and Hoist.

2.5 Field Tests:

A. The pumps, motors and controls shall be given operational tests to substantiate and record the operation of the equipment at the design heads and capacities as herein specified. The pump shall be tested for voltage, current and other significant parameters. The manufacturer shall provide a formal test procedure and forms for recording data. These tests shall be witnessed by representatives of the OWNER and the ENGINEER.

B. After all pumps have been completely installed, and working under the direction of the manufacturer, conduct in the presence of the ENGINEER, such tests as are necessary to indicate that pumps conform to the Specifications. Supply all electrical power, water or wastewater, labor, equipment and incidentals required to complete the field tests.

C. If the pump performance does not meet the Specifications, corrective measures shall be taken or pumps shall be removed and replaced with pumps which satisfy the conditions specified.

D. The CONTRACTOR shall check all motors for correct clearance and alignment and for correct lubrication in accordance with manufacturer's instructions. The CONTRACTOR shall check direction of rotation of all motors and reverse connections if necessary.

2.6 Hatches and Safety Grates: See Section 05750 – Stainless Steel Hatches with Safety Grates.

2.7 Station Valves: See Section 15120 - Mechanical Piping, Valves and Appurtenances.

2.8 Station Piping, Fittings & Plumbing: See Section 15120 - Mechanical Piping, Valves and Appurtenances.

2.9 Hoist: Hoists shall be provided in accordance with Section 13800 – Trolley and Hoist.

2.10 Station Electrical: Electrical work shall be in accordance with Division 16 - Electrical.

PART 3 - EXECUTION

3.1 Installation:

A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the Drawings. Installation shall include furnishing the required oil and grease, if any, for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations.

B. The CONTRACTOR shall submit a certificate from the equipment manufacturer stating that the installation of the equipment is satisfactory, that the equipment is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

3.2 Shop Painting:

- A. Before exposure to weather and prior to shop painting, all surfaces shall be thoroughly cleaned, dry and free from all millscale, rust, grease, dirt and other foreign matter.
- B. All pumps and motors shall be shop coated, with manufacturer's standard coating.
- C. All nameplates shall be properly protected during painting.
- D. Gears, bearing surfaces, and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during periods of storage and erection and shall be satisfactory to the ENGINEER up to the time of the final acceptance test.

3.3 Inspection and Testing:

A. General:

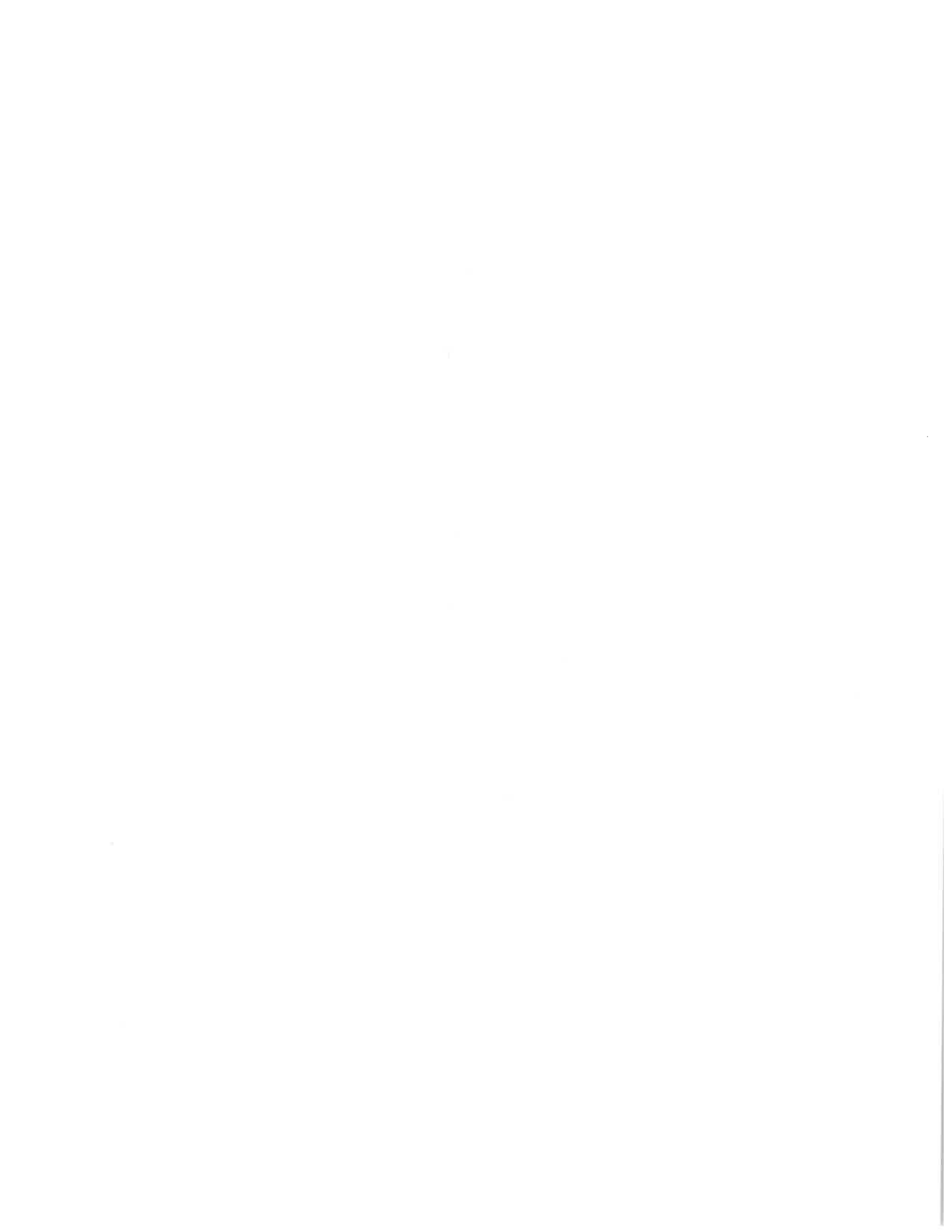
- 1. The ENGINEER shall have the right to inspect, test or witness tests of all materials or equipment to be furnished under these Specifications, prior to their shipment from the point of manufacture.
- 2. The ENGINEER shall be notified in writing prior to initial shipment, in ample time so that arrangements can be made for inspection by the ENGINEER.
- 3. Field tests shall not be conducted until such time that the entire installation is complete and ready for testing.

B. Pumps:

- 1. After all pumps have been completely installed, and working under the direction of the manufacturer, conduct in the presence of the ENGINEER, such tests as are necessary to indicate that pumps conform to the Specifications. Field tests shall include all pumps included under this Section. Supply all electric power, water or wastewater, labor, equipment and incidentals required to complete the field tests.
- 2. The CONTRACTOR shall furnish the ENGINEER with his detailed plan and procedure for conducting the required field pumps tests. The tests shall not be conducted until the ENGINEER has reviewed the procedure.
- 3. If the pump performance does not meet the Specifications, corrective measures shall be taken or pumps shall be removed and replaced with pumps which satisfy the conditions specified. A 24-hour operating period of the pumps will be required before acceptance. During this 24-hour operating period, the CONTRACTOR shall supply all power necessary.

C. Motors: The CONTRACTOR shall check all motors for correct lubrication in accordance with manufacturer's instructions. The CONTRACTOR shall check direction of rotation of all motors and reverse connections if necessary.

- END OF SECTION -



SECTION 11360DRY PIT SUMP PUMPPART 1 – GENERAL

1.1 Summary: This Section covers the requirements for furnishing and installing a single submersible sewage pump complete with motor, extended-length power cable, float control, and all accessories required for a fully operational system. Pump shall be suitable for continuous sewage service and capable of handling solids and fibrous material without clogging. Pump operation shall be controlled by the main pump control panel specified elsewhere. Installation shall be within the existing dry pit sump measuring 2 feet by 2 feet by 2 feet deep.

1.2 References: Comply with applicable provisions of Hydraulic Institute Standards, ANSI/ASME standards, the National Electrical Code, and NEMA standards.

1.3 Submittals: Submit product data in conformance with Section 01340 – Shop Drawings, Products and Sample Data.

A. Submit manufacturer's published product data indicating compliance with the specified design operating point. Submit motor and float control data, wiring diagrams showing interface with the main pump control panel, installation instructions, and recommended operation and maintenance information. Indicate the power cable length provided to reach the control panel from the sump floor.

1.4 Quality Assurance: Pump manufacturer shall be regularly engaged in the manufacture of submersible sewage pumps and shall have a minimum of ten years documented experience. Pump shall be factory tested in accordance with the manufacturer's standard procedures. All equipment shall be new and of current production.

1.5 Delivery, Storage, and Handling: Deliver equipment in original, unopened packaging. Protect equipment from physical damage, moisture, and contamination during storage and handling.

PART 2 – PRODUCTS

2.1 Manufacturer: Provide a submersible sewage pump manufactured by Xylem / Goulds Pumps. Basis of design model is WS0712BF. Proposed substitutions shall be submitted for approval and shall demonstrate equal or superior performance, construction, and serviceability.

2.2 Pump Performance: Provide a submersible, non-clog sewage pump capable of operating at a design duty point of 50 gallons per minute at 25 feet total dynamic head. Pump operation at the design point shall be within the manufacturer's recommended operating range and shall not exceed motor nameplate ratings. The pump shall be capable of passing 2-inch spherical solids. Discharge connection shall be 2-inch flanged.

2.3 Motor and Electrical: Provide a 3/4 horsepower, 230-volt, single-phase, 60-hertz submersible motor rated for continuous duty. Motor speed shall be approximately 1750 RPM. Motor shall be capacitor-start and provided with integral automatic reset thermal overload protection. Motor insulation and sealing shall be suitable for submersible sewage service. Provide a power cable of sufficient length to reach from the pump in the 2-foot-deep sump to the main pump control panel location at operational floor level. Cable shall be heavy-duty, oil-resistant, and rated for submersible service.

2.4 Float Control: Provide one submersible, mercury-free float switch for pump on–off control. Float shall be SJE-Rhombus Type 603-150, or approved equal, with a tether length suitable for the existing 2-foot by 2-foot by 2-foot deep sump. Float shall be suitable for continuous submergence in sewage and shall be wired to the main pump control panel specified elsewhere. Mounting, tether length, and elevation shall be coordinated to achieve required pump start and stop levels. Coordinate and determine on-off positions in the field with the Engineer and Owner.

2.5 Materials and Construction: Pump casing shall be cast iron. Impeller shall be cast iron, semi-open, and of non-clog design. Pump shaft shall be 300-series stainless steel. Mechanical seal shall be silicon carbide vs silicon carbide, with both rotating and stationary faces manufactured from silicon carbide for maximum wear resistance and suitability for abrasive or sewage service.

2.6 Operating Conditions: Pump shall be suitable for pumping sewage with liquid temperatures up to 104°F for continuous operation and up to 140°F for intermittent operation.

2.7 Pump Discharge Piping and Valves: Provide 2-inch stainless steel Schedule 40 pipe, ASTM A312, Type 316 stainless steel, with threaded ends in accordance with ASME B1.20.1. Furnish and install a 2-inch stainless steel female threaded check valve, suitable for vertical installation, with full-port design, resilient seat suitable for sewage service, pressure rated minimum 200 psi WOG, with NPT threaded ends; acceptable manufacturers include NIBCO, Crane, Apollo (Conbraco), or approved equal. Provide a 2-inch stainless steel female threaded gate valve, full-port, non-rising stem, pressure rated minimum 200 psi WOG, with NPT threaded ends; acceptable manufacturers include NIBCO, Crane, Milwaukee Valve, or approved equal. All piping and valves shall be suitable for wastewater service, installed in accordance with applicable ANSI, ASME, and ASTM standards, and compatible with adjoining materials.

PART 3 – EXECUTION

3.1 Examination: Verify that the existing sump, discharge piping, electrical service, and control interfaces are properly installed and ready to receive the pump. Do not install the pump or float control until unsatisfactory conditions have been corrected.

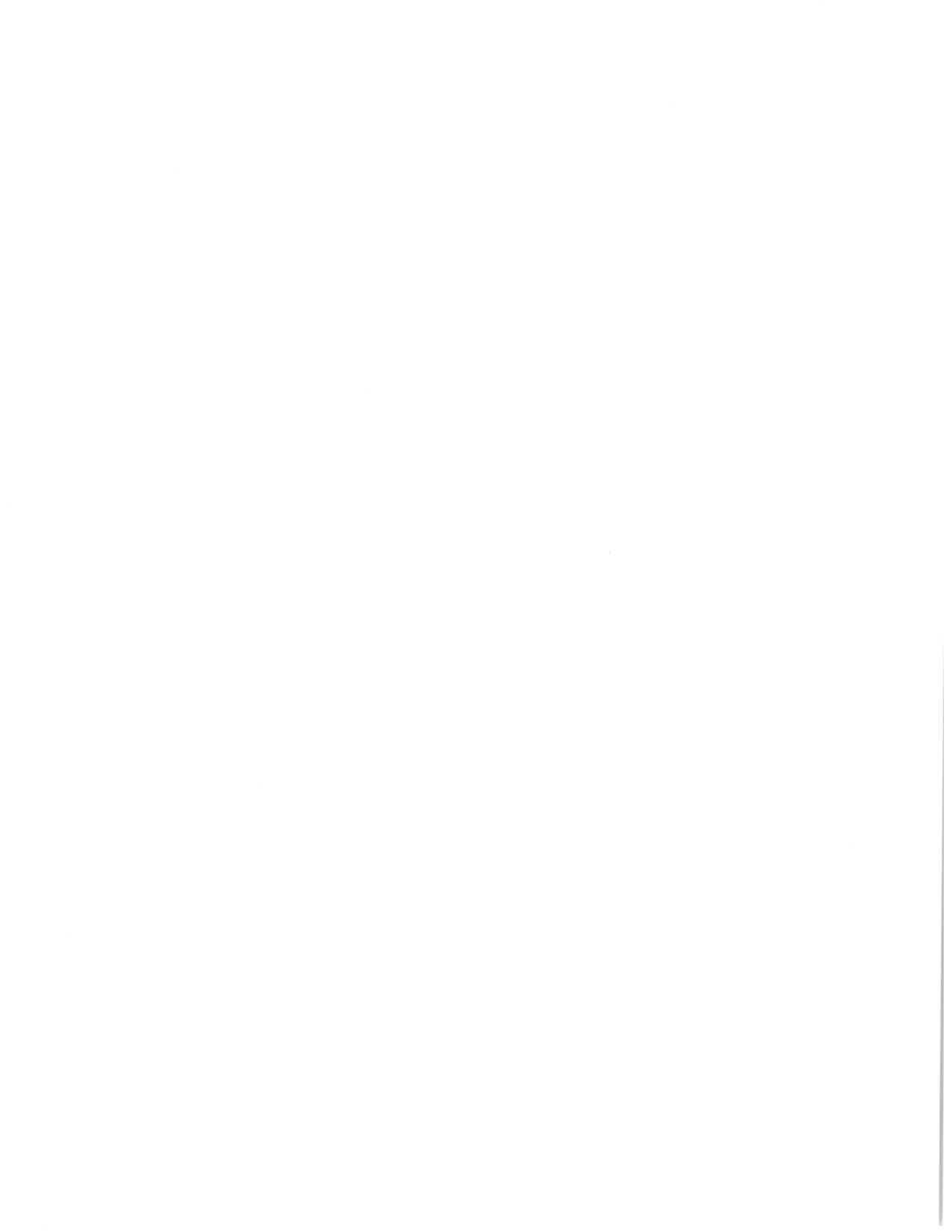
3.2 Installation: Install the pump and float control in strict accordance with the manufacturer's written instructions and applicable codes. Ensure the pump is properly seated in the 2-foot by 2-foot by 2-foot deep sump, aligned, and free of obstructions. Install float control to prevent interference with pump operation, piping, or sump walls. Electrical connections shall be watertight

and suitable for submersible service. Discharge piping shall be independently supported to prevent load transfer to the pump.

3.3 Field Quality Control: Operate the pump using the installed float control and main pump control panel to verify proper start and stop operation. Confirm correct rotation, stable operation, and that motor current does not exceed nameplate full-load amperage. Correct deficiencies and retest as required.

3.4 Adjusting and Cleaning: Adjust float elevation and tether length as required to achieve proper operating levels. Clean pump and remove debris prior to final acceptance.

END OF SECTION



SECTION 11407

PRESSURE TRANSMITTER SYSTEM

PART 1 – GENERAL1.1 Summary:

A. Furnish and install a pressure transmitter system for a sewer pump discharge piping, including:

1. Three pressure sensors for redundancy or multi-point measurement;
2. Remote digital display in the control room;
3. PLC interface via Modbus;
4. Alarm outputs for abnormal pressure readings;
5. System shall be complete with wiring, junction boxes, mounting hardware, and commissioning.

1.2 References:

- A. ISA / IEC 61010 — Instrumentation safety
- B. IEC 60529 / NEMA 4X — Environmental protection
- C. UL, CE — Electrical compliance

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples And Project Data.

- A. Product data sheets and specifications for transmitter and remote display
- B. Calibration certificates for all sensors
- C. Wiring diagrams, interface schematics for PLC and SCADA
- D. Installation, operation, and maintenance instructions

1.4 Quality Assurance: Manufacturer shall have minimum 5 years experience with wastewater instrumentation. All sensors shall be factory-calibrated and traceable to national standards. Materials exposed to sewage: 316 stainless steel or equivalent corrosion-resistant material

1.5 Delivery, Storage, And Handling: Protect all instruments from moisture, dirt, and mechanical damage. Store per manufacturer recommendations prior to installation

PART 2 – PRODUCTS

2.1 Pressure Transmitters:

- A. Type: Gauge or differential pressure transmitter for sewage service.
- B. Quantity: Three (3) transmitters for redundancy/multi-point measurement.
- C. Range: 0–100 psi.
- D. Accuracy: $\pm 0.25\%$ of full scale.
- E. Output: 4–20 mA with Modbus RTU/ASCII communication.
- F. Wetted Materials: 316 stainless steel, EPDM/FKM seals.
- G. Enclosure: NEMA 4X / IP66 suitable for dry pit conditions.
- H. Mounting: Pipe or wall bracket, secure from vibration.
- I. Approvals: UL, CE.
- J. Manufacturers: Rosemount (Emerson) — 3051 series or approved equal

2.2 Remote Display:

- A. Type: Digital display with LED/LCD readout.
- B. Mounting: Wall-mounted in control room at operator eye-level.
- C. Enclosure: NEMA 4X / IP66.
- D. Signal Input: Modbus or 4–20 mA from transmitters.
- E. Display: Pressure in PSI or feet of head, configurable units.
- F. Alarm: Visual indicator for high/low pressure limits.
- G. Power: 120 VAC or 24 VDC as specified.

H. Manufacturers:

1. Red Lion - G3 series or equivalent.
2. Yokogawa - FieldMate display or equivalent.
2. Endress+Hauser - remote display module or approved equal.

2.3 PLC Interface:

A. Communication: Modbus RTU or TCP/IP to station PLC

B. Features:

1. Pressure reading from each sensor.
2. High/low alarm inputs.
3. Status reporting for sensor fault or failure.
4. SCADA integration for logging and trend analysis.

C. PLC Manufacturer: Allen-Bradley, Siemens, Schneider, or approved equal.

2.4 Accessories:

- A. Shielded twisted pair wiring from sensors to remote display and PLC.
- B. Stainless steel junction box in dry pit for terminations.
- C. Stainless steel mounting hardware, conduit, and lightning/surge protection.

PART 3 - EXECUTION

3.1 Installation:

- A. Mount transmitters in dry pit at secure locations above expected liquid level.
- B. Provide rigid supports to prevent vibration or impact damage.
- C. Install remote display in control room per manufacturer instructions.
- D. Connect all transmitters to PLC via shielded cable, following NEC and local code.
- E. Provide surge/lightning protection at junction boxes.

3.2 Testing and Calibration:

- A. Verify factory calibration on site for all three sensors.
- B. Perform loop check and confirm Modbus communication to PLC.
- C. Verify accuracy within $\pm 0.25\%$ of full scale.
- D. Test alarm outputs to ensure proper triggering.

3.3 Commissioning:

- A. Demonstrate operation of all transmitters and remote display.
- B. Confirm PLC receives correct readings and alarms.
- C. Provide operator training, wiring diagrams, and calibration certificates.

END OF SECTION

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 13 - SPECIAL CONSTRUCTION

Section 13800 - TROLLEY AND HOIST

Section 13900 - SEWER GAS DETECTION AND CONTROL
SYSTEM

SECTION 13800TROLLEY AND HOISTPART 1 - GENERAL

1.1 Scope: This Section covers the requirements for the trolley and hoist including all work, labor, materials, tools, equipment and incidentals required to complete the item as shown on the DRAWINGS, as specified herein and or as directed by the ENGINEER.

1.2 Qualification: Crane manufacturer shall have been in business for a minimum of ten (10) years and show proof of installation, operation and maintenance of the entire crane and assembly of the type shown on the DRAWINGS of at least twenty (20) similar type installations.

1.3 Environmental Rating: Crane and all related appurtenances shall be environmentally rated for full time operation and use as Class 1, Division 1, Group D, Exterior use as defined by 29 CFR 1910.307 Hazardous Classification (Locations).

1.4 Start-Up Services: CONTRACTOR shall provide start-up services of factory trained crane manufacturer service personnel to train the OWNER'S personnel in proper operation, maintenance and safety related to the crane system. CONTRACTOR to schedule such time with OWNER and ENGINEER. Training time shall be four (4) hours on one (1) day.

1.5 Submittals: Submit shop drawings and product data in conformance with Section 01340 - Shop Drawings, Samples and Product Data, including but not limited to:

A. Certified drawings to scale representing installation required by DRAWINGS and as specified herein. CONTRACTOR to verify dimensions prior to submitting shop drawings.

B. Complete literature of all components required for successful installation.

1.6 Operation and Maintenance Manual: Submit Operation and Maintenance data as required for tentative review in conformance with Section 01730 – Operation and Maintenance Data.

1.7 Warranties and Bonds: Submit warranties and bonds for tentative review in conformance with Section 01740 – Warranties and Bonds.

1.8 Referenced Standard:

A. American Society of Mechanical Engineers (A.S.M.E.)

A.S.M.E. (B30.17-2015) – Cranes and Monorails (with Underhung Trolley or Bridge)

PART 2 - PRODUCTS

2.1 Exterior Trolley/Hoist Crane: Provide 2-ton electric chain hoist and electric trolley as shown on the DRAWINGS and as specified herein:

A.	Monorail (Trolley Beam).....	Exist S8x16
B.	Use Location	Interior
C.	Hoist Capacity.....	2 Tons
D.	Duty Class.....	HMI Class H4
E.	Lifting Height.....	30'
F.	Pendant Cable Length.....	26'
G.	Suspension/Trolley	Low Headroom
H.	Speed.....	8 ft./min.
I.	Headroom Speed.....	24"
J.	Hoisting Speed Control.....	1 speed
K.	IP Class	IP55
L.	Main Power Supply.....	1 PH., 240 V., 60 Hz.
M.	Control Voltage.....	24 VAC
N.	Power (Motor).....	2 Hp.
O.	Hoist Weight	225 lbs.
P.	Trolley Speed Control.....	1 speed inverter
Q.	Chain	1/2" Stainless steel
R.	Lifting Hook.....	Stainless steel

2.2 Hoist Manufacturer: Hoist shall be Coffing JLC Model JLC4008 (2 Ton) with universal plain trolley; The Lifting Company, or approved equal.

2.3 Festoon: CONTRACTOR to provide and install a Festoon system compatible with trolley/hoist. Festoon system shall be for indoor exposed sewer gas use and shall be 316 stainless steel and permanently lubricated.

PART 3 - EXECUTION

3.1 General: Install trolley/hoist-crane, festoon system, and all related appurtenances in strict conformance with the referenced Standard and the trolley/hoist-crane manufacturers guidelines. The pendant control cable shall be attached to the hoist. Lifting chain and hoist shall be of adequate size to accommodate required loadings.

3.2 Crane Load Test:

A. The manufacturer shall perform a load test on each piece of equipment in accordance with OSHA 1910.179.

B. After load test, manufacturer shall fully inspect all crane components for sign of distress. All distressed components shall immediately be replaced and the load test re-applied until no distressed components are discovered.

- END OF SECTION -

SECTION 13900SEWER GAS DETECTION AND CONTROL SYSTEMPART 1 – GENERAL

1.1 Scope: Furnish and install a complete exterior-mounted sewer gas detection and control system for detection and over-ride operation of intake and exhaust fans including:

- A. Outdoor corrosion-resistant gas detection controller.
- B. Three (3) remote sensors located as shown on the Drawings:
 - 1. Hydrogen Sulfide (H₂S) sensor.
 - 2. Combustible Gas / Methane LEL sensor.
 - 3. Oxygen (O₂) depletion sensor.
- C. PLC-based control panel for exhaust fan control via Modbus and discrete I/O.
- D. Exterior-mounted visual strobe alarm, no audible alarms.
- E. Automatic, manual, and timer-based exhaust fan operation.
- F. All wiring, accessories, hardware, and calibration equipment.

1.2 References:

- A. NFPA 820 – Standard for Fire Protection in Wastewater Treatment and Collection Facilities
- B. ANSI/ISA 92.00.01 – Toxic Gas Detection Requirements
- C. ISA 60079 – Electrical Equipment for Explosive Gas Atmospheres
- D. UL 61010 – Electrical Safety for Control Equipment
- E. NEMA 4X – Enclosure Rating
- F. OSHA 29 CFR 1910.146 – Confined Space Entry
- G. NEC Articles 500–505 – Electrical Areas Classification

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples And Project Data.

- A. Product Data: Detector, sensors, PLC, strobe, Modbus mapping, wiring.
- B. Shop Drawings:
 - 1. PLC I/O list
 - 2. Control panel layout
 - 3. Riser and point-to-point diagrams
- C. Test reports, calibration certificates

1.4 Quality Assurance: Manufacturer: minimum 10 years experience in industrial gas detection. PLC panel shall be UL-508A labeled. All equipment shall be factory-calibrated.

1.5 Environmental Conditions: Outdoor controller: -20°F to +120°F. Remote sensors: 0-100% humidity, wet or corrosive environments. Enclosures: NEMA 4X UV-resistant.

1.6 Power Supply: UL/CSA 12-32V-DC (24V-DC nominal).

PART 2 – PRODUCTS

2.1 Approved Manufacturers: Honeywell Analytics - Sensepoint/XCD or approved equal.

2.2 Exterior Gas Detector Controller:

- A. NEMA 4X FRP or stainless steel enclosure, lockable.
- B. Inputs: accepts 3 remote sensors.
- C. Outputs:
 - 1. 4–20 mA per sensor
 - 2. Three alarm relays (Low, High, Fault)
 - 3. Modbus RTU or Modbus TCP (as required)
- D. Display: LCD or LED.
- E. No audible alarm.

2.3 Remote Sensors: Provide three (3) remote sensors:

A. H₂S Sensor:

1. Range: 0–100 ppm.
2. Type: Electrochemical
3. Housing: Stainless steel or FRP.

B. LEL/Combustible Gas / Methane Sensor:

1. Range: 0–100% LEL.
2. Type: IR.
3. Housing: Corrosion-resistant industrial type

C. Oxygen (O₂) Sensor:

1. Range: 0–25% volume
2. Type: Electrochemical

2.4 General Sensor Requirements: NEMA 4X or IP66 corrosion-resistant housings. Conformal coated electronics. Sensor guards and splash shields. Cable rated for sewer environment. Mounting heights: See Drawings.

2.5 PLC Control Panel:

A. NEMA 4X FRP or stainless steel enclosure.

B. PLC with:

1. Minimum (8) analog inputs, 4–20 mA
2. Minimum (12) digital outputs
3. Minimum (8) digital inputs
4. Modbus RTU or Modbus TCP

C. Functions:

1. Read all three sensors via 4–20 mA and Modbus

2. Activate fans based on:
 - a. Low-level alarm.
 - b. High-level alarm.
 - c. Sensor fault override (fail-safe).
 - d. Manual override switch.
 - e. Time-based ventilation: run fans for 5 minutes every hour.
 3. Activate exterior strobe on alarm or fault
 4. Provide SCADA alarm outputs as required
- D. Include all relays, terminals, fuses, surge protection, labels.
- 2.5 Exterior Visual Alarm:
- A. LED strobe beacon, red or amber.
 - B. NEMA 4X weatherproof housing.
 - C. Flash rate: 60–90 FPM.
 - D. Minimum 75 candela output.
 - E. No audible alarm.
 - F. PLC-controlled via relay output.
- 2.6 Accessories:
- A. Calibration gas (H₂S, Methane, O₂).
 - B. Calibration kit with regulator.
 - C. Sensor mounting brackets.
 - D. Surge suppression devices.

PART 3 – EXECUTION

3.1 Installation:

- A. Mount exterior controller near station entrance, 5–6 ft above grade.
- B. Install sensors per manufacturer height requirements.
- C. Install strobe above entry door in visible location.
- D. Route wiring in corrosion-resistant conduit.
- E. All field wiring shall be tested for continuity and insulation resistance.

3.2 Startup & Testing:

- A. Factory-trained technician shall:
 - 1. Perform bump test on all sensors.
 - 2. Verify Modbus communication to PLC or SCADA.
 - 3. Test all alarm relays.
 - 4. Test strobe operation.
 - 5. Verify fan control modes:
 - a. Manual On
 - b. Gas Alarm On
 - c. Timer Mode – 5 minutes per hour
- B. Provide written test report.

3.3 Training:

- A. Provide on-site training for operators, minimum 1 hour.
- B. Training to include calibration, alarm interpretation, troubleshooting.

END OF SECTION

CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 15 - MECHANICAL

- Section 15120 - MECHANICAL PIPING, VALVES AND APPURTENANCES
- Section 15600 - MAGNETIC FLOW METERS
- Section 15700 - 16" AND 24" BURIED PLUG VALVES
- Section 15800 - SEWER GAS EXHAUST SYSTEM

SECTION 15120MECHANICAL PIPING, VALVES AND APPURTENANCESPART 1 - GENERAL

1.1 Description: This Section covers all aboveground and underground piping, valves and appurtenances as related to the construction of the Pump Station.

1.2 Product Delivery, Storage and Handling:

A. Inspection of Material at Delivery Point: When delivered to the site, and prior to unloading, the CONTRACTOR shall inspect all pipe, valves, valve boxes and meters, and accessories for loss, damage or lack of specified identification and markings. Any defective or improper material shall be immediately marked and shall not be unloaded.

B. Handling: In shipping, storing and installing, pipe, valves and accessories shall be kept in a sound, undamaged condition. They shall, at all time, be handled with care and shall not be dropped, dumped or bumped against any other object. Any material(s) damaged shall be marked and immediately removed from the job site.

C. Storing: Pipe shall be stored off the ground on sticking or pallets. Pipe shall be stacked with spigot ends projecting from the stack in opposite directions for alternate rows. Valves, couplings, fittings, etc. shall be kept clean and dry.

D. Defective Materials: All materials found at any time during the progress of the work to have cracks, flaws, or other defects will be rejected and marked and the CONTRACTOR shall promptly remove such defective material from the work site.

1.3 Applicable Publications: The publications listed below form a part of this specification to the extent referenced. The publications may be referred to in the text by basic designation only.

A. American Water Works Association:

C104	Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
C105	Polyethylene Encasement for Ductile-Iron Pipe Systems
C110	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm) for Water and Other Liquids
C111	Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
C115	Flanged Ductile-Iron Pipe with Threaded Flanges
C150	Thickness Design of Ductile Iron Pipe
C151	Ductile-Iron Pipe, Centrifugally Cast for Water or Other Liquids

- C153 Ductile - Iron Compact Fittings, 3 Inch through 24 Inch (76 mm through 610 mm) and 54 inch through 64 inch (1,400 mm through 1,600 mm) for Water Service.
- C500 Metal-Seated Gate Valves for Water Supply Service
- C509 Resilient Seated Gate Valves for Water Supply Service
- C550 Protective Epoxy Interior Coating for Values and Appurtenances
- C600 Installation of Ductile-Iron Water Mains and Appurtenances
- C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4 Inch through 12 Inch, for Water Distribution
- C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 Inch through 63 Inch, for Water Distribution
- C901 Polyethylene (PE) Pressure Pipe and Tubing, ½ inch through 3 inch, for Water Service

B. American Society for Testing and Materials:

- A 120 Specifications For Cast Iron Castings for Valves, Flanges, and Pipe Fittings
- A126 Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
- A240 Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels
- A312 Specification for Seamless and Welded Austenetic Stainless Steel Pipe
- A 536 Specifications for Ductile Iron Castings
- D1784 Rigid Poly (Vinyl Chloride)(PVC) Compounds and Chlorinated Poly (Vinyl Chloride)(PVC) Compounds
- D2240 Test Method for Rubber Property - Durometer Hardness
- D2241 Poly (Vinyl Chloride)(PVC) Plastic Pipe (SDR-PR)
- D2737 Specifications for Polyethylene (PE) Plastic Tubing
- D3139 Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals

1.4 Quality Assurance and Qualifications: All equipment furnished under this specification shall be new and unused, and shall be the standard product of a manufacturer having a successful record of manufacturing and servicing the equipment specified herein for a minimum of five (5) years.

1.5 Submittals: Provide data specified in accordance with Section 01340 - Shop Drawings, Samples, and Project Data.

1.6 Operation and Maintenance Manuals: Complete operation and maintenance manuals for the pump station valves shall be provided in accordance with Section 01730 - Operation And Maintenance Manual.

1.7 Certificate of Compliance: The CONTRACTOR shall furnish a certificate indicating the pump station valves comply with the requirements indicated on the Drawings and Specifications. If the valves do not comply with all of the requirements and were approved by the ENGINEER, the certificate shall specifically indicate the requirements met and not met for the valves.

PART 2 - PRODUCTS

2.1 Ductile Cast Iron Pipe and Fittings (Underground):

A. Ductile Cast Iron Pipe: Ductile cast iron (D.I.) pipe used underground shall be designed in accordance with ANSI/AWWA C151/A21.51 and ANSI/AWWA C111/A21.11 specifications and have mechanical joints unless otherwise shown on the Drawings. Mill certificates shall be furnished upon request of the ENGINEER. Pipe shall be as specified below:

12" thru 24" – Ductile Iron – Pressure Class 250

B. Coating and Lining: The pipe shall be cement lined on the inside according to AWWA C104 and seal coated outside with a one (1) mil thick asphaltic coating in accordance with AWWA C151. Underground ductile iron pipe and fittings shall be wrapped in polyethylene wrap as specified herein.

C. Fittings: Ductile iron fittings used underground shall be mechanical joint unless otherwise shown on the Drawings in accordance with ANSI/AWWA C153/A21.53 and ANSI/AWWA C111/A21.11 specifications. Fittings shall have a pressure rating of 350 psi. Follower glands shall be of the same manufacturer as the fittings.

D. Bolts and Nuts for Mechanical Joint Fittings: Bolts and nuts for mechanical joints shall be Cor-Ten T bolts as manufactured by NSS Industries of Plymouth, Michigan (1-800-221-5125), Technical Fastener, Inc., Fastener Technology, or approved equal.

2.2 Ductile Cast Iron Pipe and Fittings (Aboveground):

A. Ductile Cast Iron Pipe: Ductile cast iron (D.I.) pipe used aboveground shall be designed in accordance with ANSI/AWWA C115/A21.15 and ANSI/AWWA C110/A21.10 specifications and have flanged joints unless otherwise shown on the Drawings. Mill

certificates shall be furnished upon request of the ENGINEER. Pipe shall be as specified below:

12" thru 24" – Ductile Iron – Pressure Class 250

B. Interior Lining: The pipe shall be cement lined on the inside according to AWWA C104.

C. Coatings: Exposed ductile iron pipe and fittings shall not receive the standard tar or asphalt coat on the outside surfaces but shall be shop primed and painted in accordance with Section 09900 - Painting or approved equal.

D. Fittings: Ductile iron fittings used aboveground shall be flanged joint unless otherwise shown on the Drawings in accordance with ANSI/AWWA C110/A21.10 Specifications. Fittings shall have a pressure rating of 250 psi. Coating and lining shall be the same as specified for pipe.

2.3 Polyethylene Wrap: Polyethylene wrap shall conform to AWWA C105 specifications. Film shall be Class "C" - Black, with a minimum nominal thickness of .008 inches (8 mils). Tape for securing the film shall be thermoplastic material with a pressure sensitive adhesive face capable of bonding to metal, bituminous coating and polyethylene. Tape shall have a minimum thickness of 8 mils, and a minimum width of one (1) inch. The polyethylene film envelope shall be free as is commercially possible of gels, streaks, pinholes, particles of foreign matter, and undispersed raw materials. There shall be no other visible defect such as holes, tears, blisters, or thinning out at folds. Manufacturers shall furnish a certification of conformance of the material to the requirement of AWWA C105 or ANSI A21.5. The polywrap shall be as manufactured by Dupont, Polytube Corporation, or approved equal. The tape shall be Scotch Wrap No. 50 as manufactured by 3M, Repecor, Inc. of Mequon, WI (262)241-5900, or approved equal.

2.4 Stainless Steel Pipe: All pipe valves for 2" stainless steel air release vents and sump pump piping shall be Schedule 40, Type 316 manufactured in accordance with ASTM A312. Unless otherwise shown on the Drawings, stainless steel pipe shall have threaded ends. Stainless steel fittings shall be in accordance with ASTM A-774 or A-403CR.

2.5 Check Valves:

A. Swing check valves are of self-contained, free-swinging disc style, allowing a full waterway. Valve disc swings freely open and is keyed to valve hinge pin without use of pins. Valves conform to all standards set forth in AWWA C508, Latest Edition. Valve hinge pins are Stainless Steel. Manufacturer should have minimum of 10 years' experience supplying AWWA C508 valves.

B. Valves may be supplied with external lever with weight or spring to assist closure if required by customer. The pressure rating shall be 200 psi for valves 12" and smaller and 150 psi for valves 14" through 24".

C. Valves shall conform to ANSI B16.1: Cast Iron Pipe Flanges and Flanged Fittings Class 25,125,250 and 800 and AWWA C508: Swing Check Valves for Waterworks Service, 2" through 24" NPS. Valves are rated for 200 psi water working pressure. All testing is done

in accordance with AWWA C508. Valves have integrally cast flat face flanges in accordance with ANSI BI6.1 Class 125. All cast iron used conforms to ASTM A126 CLB. Valve Hanger and Disc are of cast iron conforming to ASTM A126 CLB. Hinge Pins conform to ASTM A276 GR304. Seat Rings are of Low Zinc Bronze conforming to ASTM B62 or of Stainless Steel conforming to ASTM A276 GR316. Internal and external coatings are high build two component epoxy conforming to AWWA C550.

D. All valves meet the standards of AWWA C508. All valves utilize a single disc mounted to a clevis hinge which prevents the disc from tipping. The valve disc swings open once the pump starts and allows for full flow. When closed, the valve offers a tight shut-off. Valve body and cover are of Cast Iron, valve hinge is of Cast Iron. Disc seating surface is either Bronze, Stainless Steel or of Buna-n depending on application. Valve seat rings are of Bronze or Stainless Steel. The valve body has a bolted cover design and flanges are integral to body casting –not wafer style. Valve body and disc are designed in such a way as to minimize turbulence. Spring systems are externally mounted on the side of the body and do not come into contact with main line media. Markings on the valves are in accordance with AWWA C508, and include the name of manufacturer, the year of manufacture, maximum working pressure and size of valve.

E. All valves are built for horizontal installation. However, all valves operate equally well in the vertical installations. Prior to valve installation, the manufacturer should be notified of vertical mounting position so lever arm and weight can be properly positioned on valve. Valve shall be Pratt Series 8001 Swing Check Valve as manufactured by the Henry Pratt Company, or approved equal.

2.6 Pump Station Wet Well Vent: The pump station wet pit vent shall be 14” ductile iron pipe with flanged joints as specified in paragraph 2.2. A sixteen (16) mesh fiber glass insect screen shall be neatly and securely bolted to the end of the piping system to prevent access of insects to pit using a fourteen (14”) inch filler flange, ½” thick.

2.7 Pressure Gauge: Refer to Section 11407 – Pressure Transmitter System.

2.8 Stainless Steel Ball Valve: Stainless steel ball valves used for combination sewage main and vacuum release valve shall be 2” hand operated and shall have NPT threaded ends, TFE seat and stainless steel trim. Ball valves shall be Model S-FBV as manufactured by Watts Regulator of Houston, Texas (713-943-0688), Model S152-S6-T-S6 as manufactured by Rockwell International, or approved equal.

2.9 Flexible Coupling: A flexible coupling shall be installed on the discharge piping at locations shown on the Drawings. The flexible coupling shall be a Flexmore Style 450 as manufactured by Mercer Rubber Company of Hamilton Square, New Jersey (609) 587-1200, Fernco, Mission Rubber Products, or approved equal. The flexible coupling shall be supplied with a control rod harness to prevent excessive expansion and contraction of the coupling. The flexible coupling control rod harness shall be sized according to the manufacturer’s recommendations.

2.10 Combination Sewage Air Release & Vacuum Break Valve: The sewage air release and vacuum break valve shall consist of a compact Ductile Iron single chamber body design. The valve construction shall be proportioned with regard to material strength characteristics, so that the

deformation, leaking or damage of any kind does not occur by submission to twice the designed working pressure. All interior wetted parts shall be either the epoxy-coated ductile, stainless steel, or polymer material (HDPE or Polyurethane) to give superior performance with exposure to municipal sewage. A direct acting float and a solid cylindrical High Density Polyethylene large orifice control float and anti-shock float with stainless steel nozzle and woven dirt inhibitor screen. All valves shall seal dynamically against a flat surface. Seals and seats shall be of EPDM. No floats shall be used which can be deformed, dented or lodged in the large orifice. The valve shall have an integral surge alleviation mechanism which shall limit transient pressure rise or shock due to the subsequent rejoining of separated liquid columns. A spring loaded Biased mechanism shall be provided when required to reduce the air flow exiting the valve to help reduce shock. The limitation of pressure rise must be achieved by deceleration of approaching water prior to valve closure. Relief mechanisms that act subsequent or after valve closure cannot react in the low millisecond time span required and are therefore unacceptable. Discharge of pressurized air shall be controlled by the seating and unseating of a small orifice on a natural/EPDM rubber seal affixed to the control float. The intake/discharge orifice area shall be equal to the nominal size of the valve i.e. a 50mm (2") valve shall have a 50mm (2") intake/discharge orifice. No restriction shall be allowed in order to give maximum protection to the pipeline in the event of negative pressure. All valves shall open fully should there be air intake owing to a vacuum forming in the line and therefore where sealing is done by means of ball type floats they shall not be used. Performance data must be provided from a third party showing intake and discharge rates, including the controlled discharge owing to an increase in velocity of air due to the possible rejoining of separated liquid columns. Valve shall have a 10 year in-service warranty for all internal components. Valve shall be Vent-O-Mat RGX II by RF Valves, Inc. or approved equal.

2.11 Eccentric Plug Valves (Dry Pit):

A. Plug valves shall be of the non-lubricating, eccentric type and shall be designed for a working pressure of 175 psi for valves 12" and smaller. Valves shall provide tight shut-off at rated pressure. Valves 12" and smaller shall have round port design. The plug valve body shall be cast iron ASTM A126 Class B with welded-in overlay of at least 90% nickel alloy content on all surfaces contacting the face of the plug. Sprayed, plated, nickel welded rings or seats screwed into the body are not acceptable. The valve plug shall be ductile iron ASTM A-536, Grade 65-45-12, in valve sizes up to 12" with Buna N resilient seating surface to mate with the body seat. Valve flanges shall be in strict accordance with ANSI B16.1, Class 125. Plug valve shall be furnished with permanently lubricated sleeve type bearings conforming to AWWA C517. Bearings shall be of sintered, oil impregnated type 316 stainless steel ASTM A-743 Grade CF-8M or bronze ASTM B-127. Valves shaft seals shall be of the "U" cup type, in accordance with AWWA C517. Seals shall be self adjusting and repackable without moving the bonnet from the valve.

B. Eight (8") inch and larger exposed valves shall be provided with worm gear type manual actuators. Valve actuators shall be fully grease packed and have stops in the open/close position. The actuator shall have a mechanical stop which will withstand an input torque of 450 lbs. against the stop. The actuator shall be able to provide 1.25 times the required operating torque under full rated line pressure combined with a flow velocity of 8 feet per second. Valve shall be the Pratt Ballcentric Plug Valve as manufactured by the Henry Pratt Company or approved equal.

2.12 Valve Boxes: Valve boxes shall be three (3) piece adjustable, five and one-quarter (5¼") inch shaft diameter, high grade screw-type cast iron valve boxes and shall be Series 6850 as manufactured by the Tyler Corporation of Tyler, Texas, Bingham & Taylor of Culpeper, VA (540)825-8336, or approved equal. The cast iron valve box shall have a base large enough to fit completely over the valve bonnet and shall have the word "Water" embossed on the top side of its cover.

2.13 Mechanical Joint Restraint Devices: Mechanical joint restraint devices shall include a restraining mechanism which, when actuated, imparts multiple wedging action against the pipe, increasing its resistance as the pressure increases. Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A 536-80. Restraining devices shall be of ductile iron heat treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI/AWWA A21.11 and ANSI/AWWA C153/A21.53 of latest revision. Twist-off nuts shall be used to insure proper actuating of the restraining devices. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be MEGALUG as manufactured by EBAA Iron, Inc., Ford Meter Box Company, Inc. of Wabash, Indiana (260)563-3171, or approved equal.

2.14 Cutting-In Sleeves: Cutting-in sleeves shall be used to connect MJ bell ends to plain end pipe. Cutting-in sleeves shall be constructed of ASTM A536 ductile iron. The gasket shall be composed of ASTM D2240 styrene butadiene rubber. The sleeves shall be manufactured to withstand a maximum working pressure of 150 psi. Cutting-in sleeves shall be Model 3520 as manufactured by PowerSeal Pipeline Products Corporation of Wichita Falls, Texas (940)767-5566 (www.powerseal.com), Tyler/Union, or approved equal.

2.15 "Foster" Adapter: "Foster" Adapters shall be installed where shown on the Drawings to connect mechanical joints to mechanical joints. "Foster" Adapters shall be constructed of ASTM A536 ductile iron. The gasket shall be composed of ASTM D2240 styrene butadiene rubber. Foster Adapters shall be as manufactured by Infact Corporation of Fairview, Tennessee (1-888-773-9130), Independent Pipe Products of Dallas, TX (800) 499-6927, or approved equal.

2.16 Joint Restraints for PVC Pipe: Restraint devices for C-900 PVC pipe joints shall be Series 1600 Ductile Iron Retainers as manufactured by EBAA Iron, Inc., Ford Meter Box Company, Inc. of Wabash, Indiana (260)563-3171, or approved equal. Restraint devices for IPS O.D. PVC pipe joints shall be Series 6500 Ductile Iron Retainers as manufactured by EBAA Iron, Inc., Ford Meter Box Company, Inc. of Wabash, Indiana (260)563-3171, or approved equal. The restraint devices shall be certified by the manufacturer to restrain the test and working pressures.

2.17 Caps and Plugs:

A. Where existing lines are to be abandoned, the ends shall be cut and fitted with an appropriately sized cap or plug. The cap or plug material may be PVC. The capped end shall be backfilled with compacted native material in such a manner as to ensure the integrity of the cap.

B. Where lines are to remain in service, the ends shall be cut and fitted with a ductile iron mechanical joint coupling with a ductile iron plug or with a ductile iron mechanical joint

cap. This assembly shall be blocked with concrete thrust blocking.

2.18 Backfill Material for Valves and Valve Boxes: Material for backfill of valves and valve boxes shall be select fill.

2.19 Concrete For Thrust Blocking: Concrete required for thrust blocking shall be Class A with a 28-day compressive strength of 3,000 psi and in conformance with Section 03300 - Cast-In-Place Concrete.

2.20 Concrete Valve Box Pads: Concrete required for cast-in-place valve box pads shall be ~~Class A with a 28-day compressive strength of 3,000 psi and~~ in conformance with Section 03300 - Cast-in-place Concrete. Contractor may provide precast concrete pads in lieu of cast-in-place concrete pads. Precast concrete pads shall be "Round Valve Box Pad" as manufactured by Southern Meter Box, Inc. of Alexandria, La. (1-800-239-6122), Jabar, or approved equal.

2.21 Pipe Supports: Refer to Section 05500 – Miscellaneous Metals.

PART 3 - EXECUTION

3.1 General: All pipe, valves, appurtenances and accessories shall be installed as indicated on the Drawings. Any deviations must be approved by the ENGINEER before installation.

3.2 Installation:

A. Equipment, materials, installation, workmanship, fabrication, assembly, erection, examination, inspection and testing shall be in accordance with manufacturer's recommendations and standard construction procedures. Install piping straight and true to bear evenly on supports. Installation shall include furnishing the required oil and grease, if any, for initial operation.

B. Keep the interior and ends of new piping and existing piping thoroughly cleaned of water and foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of piping and fittings so that water and foreign matter will not enter the pipes or fittings. Inspect piping before placing into position.

3.3 Inspection of Pipe Before Installation: All pipe, fittings and related items shall be carefully inspected in the field before lowering in the trench. Cracked, broken, warped, out of round or otherwise defective pipe, fittings, or other related items, as determined by the CONTRACTOR or the ENGINEER, shall be pulled and not installed. Such rejected pipe shall be clearly tagged in such a manner as not to deface or damage it, and the pipe shall then be removed from the job site by the CONTRACTOR at his own expense.

3.4 Pipe and Fittings:

A. Inspect, test, and approve piping before installing. Provide fittings for changes in direction of piping and for all connections. Make changes in piping sizes through tapered reducing pipe fittings; do not use bushings.

B. Jointing compound for pipe threads shall be polytetrafluoroethylene (PTFE) pipe thread tape or PTFE powder and oil; apply only on male threads. Provide exposed ferrous pipe threads with one coat of zinc chromate primer applied to a minimum dry film thickness of one mil.

C. Provide supports as shown on Drawings.

3.5 Pipe Bedding Conditions: All pipes and other related items laid in open trench excavations shall be haunched or bedded in and uniformly supported over their full length on beddings of the types specified, if any, as shown on the Drawings. Flat-bottomed trenches shall be excavated and dewatered in accordance with the appropriate section of these Specifications, prior to preparing the specified foundations. All work shall be performed in a dry trench. Where bedding conditions of a higher type than those shown on the Drawings or called for in the Specifications, are ordered as a result of the CONTRACTOR'S method of operation, the CONTRACTOR shall be due no additional compensation. Where directed by the ENGINEER as a result of unsuitable soil conditions, the CONTRACTOR shall be paid for special bedding under appropriate bid items, or if not included as a bid item as negotiated.

3.6 Pipe Laying: Every precaution shall be taken to prevent foreign material from entering sewer pipe while it is being placed in the trench. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a water tight plug or other means approved by the ENGINEER. If water is in the trench, the seal shall remain in place until the trench is pumped enough to resume laying operations. No pipe shall be laid in water or when, in the opinion of the ENGINEER, trench conditions are unsuitable.

3.7 Installation of Underground Ductile Iron Pipe and Fittings: Installation shall conform to ANSI/AWWA C600 specifications and use a Type 2 trench as detailed in that standard.

3.8 Installation of Underground Valves and Valve Boxes:

A. All valves and valve boxes shall be backfilled with one-half cubic yard of red dirt as shown on the Drawings.

B. The valve boxes shall have a concrete pad poured at the top of the box as detailed on the Drawings and painted "safety green".

3.9 Installation of Polyethylene Wrap:

A. All underground ductile iron pipe, fittings and valves shall be wrapped with an eight (8) mil thickness polyethylene wrap and conform to AWWA C105 specifications.

B. The polyethylene wrap shall be installed by taping one end to the proceeding joint, sliding the wrap along the full joint being installed, then twisting that wrap around the pipe so as to bring it up snugly against the body of the pipe.

3.10 Coatings:

A. All pipes shall be shop coated as specified.

B. All nameplates shall be properly protected during painting.

C. Gears, bearing surfaces, and other similar surfaces obviously not to be painted shall be given a heavy shop coat of grease or other suitable rust-resistant coating. This coating shall be maintained as necessary to prevent corrosion during periods of storage and erection and shall be satisfactory to the ENGINEER up to the time of final acceptance.

D. Prior to painting, all surfaces shall be thoroughly cleaned, dry and free from all mill scale, rust, grease, dirt and other foreign matter. All surfaces to be painted shall be cleaned with an industrial grade cleaner.

E. The CONTRACTOR has the option of applying both the exterior prime coat and the final coat by brush, roller or spray. The CONTRACTOR shall take all necessary precautions to protect adjacent areas from over spray.

F. The coatings shall be applied in accordance with the manufacturers' recommendations, with respect to weather conditions, surface preparation, application techniques and minimum dry film thicknesses.

G. The top coat color selection shall be made by the ENGINEER based upon a color selection chart provided by the CONTRACTOR which shall include as a minimum, five standard colors.

H. Refer to Section 09900 - Painting.

3.11 Installation of Non-Corrosive Metallic Wire: The CONTRACTOR shall install a non-corrosive metallic wire directly over and on the center of all plastic water lines. This wire shall be carried through with the line in locations where short sections of ductile pipe is used. The wire shall be continuous on all mains and service lines and shall be connected to all fixtures and appurtenances. The locator wire shall be attached to the water mains and service lines with duct tape at eight (8) foot intervals. The wire shall be connected to all valves and shall be brought up through any valve boxes.

3.12 Installation of Wire Splice Kit: Splice caps as specified shall be installed over wire splices then be folded adjacent to the wire run and wrapped tightly with electrical tape as shown on the Drawings.

3.13 Installation of Underground Valves and Valve Boxes: All valves and valve boxes shall be backfilled with select fill as shown on the Drawings. The valve boxes shall have a concrete pad placed at the top of the box as detailed on the Drawings and painted green.

3.14 Cutting and Capping Lines:

A. Existing water lines shall be cut, capped and blocked where designated on the Drawings. Existing water pipe is to be cut in a straight and true face after arranging with the OWNER'S personnel on a timing and sequence of valving-off the section to be cut. The cut ends shall be cleaned for attachment of appropriate fittings. Unless otherwise specified, fittings shall include a ductile iron mechanical joint plug or cap with retainer glands and nipples as required. Concrete blocking shall be installed on all water mains to remain in service. As part of the operation, the CONTRACTOR shall physically remove a length of the pipe as indicated on the Drawings and if not indicated a length of five (5) feet. Where mechanical joint fittings cannot be used because of job conditions, the CONTRACTOR shall request approval of the ENGINEER for use of alternative type fittings.

B. Included in this item is also the capping of any lines to be abandoned. The sequence of water cut-off operations will determine the type of capping and blocking to be required for the end of pipe to be eventually abandoned. The existing line to be abandoned, however, must have the ends sealed under any sequence of cut-off developed.

3.15 Installation of Concrete Thrust Blocking:

A. Concrete thrust blocking of water mains shall be provided at all trees, bends, dead ends, valves and other such appurtenances as indicated on the standard detail sheet of the Drawings.

B. Thrust blocking shall not be measured nor paid for separately and is considered a subsidiary part of the pipeline work and the cost of the thrust blocking shall be included in the pipeline unit price or considered a subsidiary obligation under this Contract.

3.16 Connection to Existing Lines:

A. Connection to existing lines shall be performed under the direct inspection of the ENGINEER. The ENGINEER shall be notified 24 hours in advance of any planned line connection.

B. Verify the outer dimension and type of existing lines which are to be connected for tying the new line to the existing lines prior to ordering connection equipment and fittings. Any deviation from the data shown on the Drawings shall be brought to the attention of the ENGINEER for resolution.

3.17 Field Hydrostatic and Leakage Tests:

A. General: Field hydrostatic and leakage testing shall conform to the requirements of AWWA C600, "Section 4: Hydrostatic Testing", except as modified herein.

B. All pipe and fittings shall be field tested. The CONTRACTOR shall supply all labor, equipment, materials, gauges, pumps, meters, and incidentals required for testing. The ENGINEER shall be notified at least 48 hours in advance of the test.

C. Testing shall not be made until compressive strength results for thrust blocking concrete in the test section have been received and reviewed by the ENGINEER. Under no circumstances shall the CONTRACTOR proceed with pressure and leakage testing until a minimum of seven (7) days after the final concrete thrust block in the test section has been installed.

D. The test pressure shall be 150 psig and shall be maintained for four (4) hours. The test pressure shall be measured at the lowest point along the test section by a recording type pressure gauge and a copy of the readout shall be submitted to the ENGINEER upon completion of the test.

E. Pipe trenches shall be backfilled, but fittings, valves, and joints shall be left uncovered during the test. Permanent pavement shall not be installed over the backfilled trench until satisfactory test results have been obtained.

- F. Testing procedure shall be as follows:
1. Fill line slowly with water. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure.
 2. Expel air completely from the line during filling and again before applying test pressure. Air shall be expelled by means of taps at points of highest elevation.
 3. Apply test pressure and allow the test section to stabilize at the test pressure before conducting the leakage test.
 4. Measure the quantity of water that must be pumped into the line to maintain pressure within 5 psi of the test pressure for a period of 2 hours. This quantity is defined as leakage.
 5. Carefully examine all exposed pipe, fittings, valves and joints during the test for leakage.
 6. Upon completion of the test, the pressure shall be bled off from a location other than the point where the pressure is monitored. The pressure drop shall be witnessed by the ENGINEER at the point where the pressure is being monitored and shall show on the recorded pressure readout submitted to the ENGINEER.
- G. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the test pressure, in psig.

- H. If any section of pipe installed produces leakage greater than the allowable, the CONTRACTOR shall, at his own expense, locate and repair the cause of leakage and retest the line.
- I. All visible leaks are to be repaired regardless of the amount of leakage.

- END OF SECTION -

SECTION 15600MAGNETIC FLOW METERSPART 1 – GENERAL

1.1 Scope: Furnish, install, test, and place into service complete electromagnetic (magnetic) flow meter systems for wastewater service in 16-inch and 24-inch sewer force mains. Each magnetic flow meter shall consist of a Rosemount 8705 primary flow sensor and a Rosemount 8712 remote-mounted transmitter, together forming one complete magnetic flow meter assembly. Each system shall include a flanged magnetic flow sensor installed in a below-grade vault, a remotely mounted transmitter located up to 400 feet from the sensor, interconnecting cables, grounding components, and all accessories required for a complete and operable installation. Flow meters shall be suitable for continuous wastewater service and continuous submergence of the sensor.

1.2 References:

- A. American Water Works Association (AWWA)
 - 1. AWWA C219 – Bolted Sleeve-Type Couplings for Plain-End Pipe
- B. National Electrical Manufacturers Association (NEMA)
 - 1. NEMA 250 – Enclosures for Electrical Equipment C. International
- C. Electrotechnical Commission (IEC)
 - 1. IEC 60529 – Degrees of Protection Provided by Enclosures (IP Code)

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples and Project Data.

- A. Product data sheets for Rosemount 8705 sensor and Rosemount 8712 transmitter.
- B. Certified dimensional drawings showing meter, straight pipe requirements, vault layout, and removal clearances.
- C. Manufacturer's written confirmation of submergence ratings and allowable remote mounting distance.
- D. Factory calibration certificates.
- E. Wiring diagrams and grounding details.

1.4 Quality Assurance: Magnetic flow meters shall be supplied by a single manufacturer. Sensors and transmitters shall be factory matched and calibrated. Meter accuracy shall be ± 0.5 percent of rate or better.

1.5 Delivery, Storage, And Handling: Handle equipment in accordance with manufacturer's recommendations. Protect liners and electrodes from damage at all times.

PART 2 - PRODUCTS

2.1 Manufacturer: Rosemount or approved equal. The term "magnetic flow meter" as used herein refers to the complete assembly including the flow sensor, transmitter, interconnecting cables, grounding components, and all required accessories.

2.2 Flow Sensor: Rosemount 8705 flanged magnetic flow sensor. 16 and 24 inch nominal diameter. Pressure Rating: ANSI Class 150 minimum. Liner: PTFE or hard rubber suitable for raw wastewater and sewage service. Electrodes: Type 316 stainless steel or Hastelloy C. Accuracy: ± 0.5 percent of rate or better. Flanges: ANSI Class 150, full-face. Submergence: Sensor shall be rated IP68 / NEMA 6P. Sensor shall be suitable for continuous submergence with a minimum rating of 10 feet of water head above the sensor body. Submergence rating shall apply with all signal and coil cables connected.

2.3 Transmitter: Rosemount 8712 remote-mounted transmitter. Enclosure: NEMA 4X for dry or indoor locations. NEMA 6P / IP68 where installed in wet or below-grade locations. Power: 120 VAC, single-phase, 60 Hz. Outputs: One isolated 4–20 mA analog output. One pulse output. HART communication protocol. Display: Local LCD display for flow rate, total flow, and diagnostics. Remote Mounting Distance: Transmitter shall be capable of installation up to 400 feet from the sensor without loss of accuracy.

2.4 Cables and Accessories: Provide Rosemount factory-supplied signal and coil drive cables suitable for the specified separation distance. Cables shall be shielded and rated for wet locations and continuous submergence where installed in vaults. Provide grounding rings, grounding electrodes, and bonding jumpers as required by manufacturer and installation conditions.

PART 3 - EXECUTION

3.1 Installation: Install equipment in strict accordance with manufacturer's written instructions and approved submittals. Install meters in locations shown on the Drawings and as required to maintain a full pipe under all operating conditions.

3.2 Orientation and Straight Pipe: Install sensors horizontally with electrodes positioned at 3 and 9 o'clock. Vertical installation is permitted only with upward flow and full pipe conditions. Straight Pipe Lengths: Minimum of five (5) pipe diameters upstream and three (3) pipe diameters downstream of the sensor. Required straight lengths may be satisfied using straight flanged pipe spools of the same nominal diameter as the meter. Straight pipe spools shall be full-diameter,

concentric, unobstructed, and free of reducers, elbows, tees, valves, or branch connections. Straight flanged pipe spools provided for meter removal and maintenance may be located within the required upstream and downstream straight-run lengths, provided such spools meet the requirements herein.

3.3 Vault Installation: Install sensors in below-grade concrete vaults. Vaults shall provide sufficient clearance for meter removal and maintenance. Sensors shall be continuously rated for submerged operation.

3.4 Transmitter Installation: Mount transmitters at the remote reading location indicated. Provide sealed conduit systems between sensor and transmitter.

3.5 Field Quality Control: Verify wiring, grounding, and configuration. Perform manufacturer-recommended startup and functional testing. Demonstrate proper operation to the Owner.

END OF SECTION

SECTION 1570016" AND 24" BURIED PLUG VALVESPART 1 – GENERAL

1.1 Scope: Furnish and install 16 and 24 inch buried eccentric plug valve complete with worm gear actuator, vertical stem extension, operating nut, and cast-iron valve box, fully assembled and suitable for buried service. Valve shall be installed with stem vertical and operating nut on top, with all components aligned vertically.

1.2 References:

- A. AWWA C517 – Resilient-Seated and Eccentric Plug Valves
- B. AWWA C504 – Rubber-Seated Butterfly Valves (torque reference only)
- C. AWWA C500 – Metal-Seated Gate Valves (operating nut reference)

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples And Project Data.

A. Product data for valve, worm gear actuator, stem extension, and valve box. B. Shop drawings showing:

- 1. Valve orientation (stem vertical).
- 2. Worm gear mounted on top of valve bonnet.
- 3. Vertical stem extension with couplings and guides.
- 4. 2-inch operating nut at grade
- 5. 5.25-inch cast-iron valve box
- 6. Manufacturer's certification that valve and actuator are suitable for vertical stem buried installation.

1.4 Quality Assurance: Valve and actuator shall be manufactured and supplied by the valve OEM. Worm gear actuator shall be factory-mounted to the valve. Valve shall be rated for full differential pressure in the closed position.

1.5 Delivery, Storage, And Handling: Protect valve and actuator from dirt, moisture, and damage. Do not remove protective coatings until installation.

PART 2 – PRODUCTS

2.1 Acceptable Manufacturer: Val-Matic Valve & Manufacturing Corporation or approved equal. Requests for approval of equals shall be submitted a minimum of 15 days prior to bid and shall include complete technical data, drawings, and manufacturer's certification demonstrating compliance with the following minimum requirements:

1. Compliance with AWWA C517.
2. Suitability for buried service and vertical stem installation.
3. Factory-supplied, top-mounted worm gear actuator sized for required operating torque.
4. Ability to provide a vertical stem extension and 2-inch AWWA operating nut.
5. Compatibility with installation in a 5.25-inch cast-iron valve box.

(Side-mounted or right-angle gear operators shall not be considered equal.)

2.2 Eccentric Plug Valve: Cam-Centric Eccentric Plug Valve 16 and 24 inches. AWWA C517. Body and Bonnet: Cast iron or ductile iron per AWWA C517 E. Plug: Ductile iron, fully rubber encapsulated. Bearings: Sleeve or antifriction bearings designed to support vertical stem orientation. Ends: Mechanical Joint. Coatings: Fusion-bonded epoxy interior and exterior.

2.3 Worm Gear Actuator: Provide a Val-Matic factory-supplied worm gear actuator designed for buried service. Actuator shall be:

1. Mounted directly on top of the valve bonnet.
2. Rated for required break and run torque of the 16 and 24 inch valve.
3. Totally enclosed, grease-packed, and sealed.
4. Corrosion resistant
5. Actuator input/output shall be suitable for connection to a vertical stem extension.
6. Side-mounted or right-angle gear operators are not permitted.

2.4 Stem Extension and Operating Nut: Provide a vertical stem extension, adjustable for depth of cover. Stem extension shall include corrosion-resistant couplings and guides as required to maintain alignment. Operating nut shall be 2-inch AWWA standard, located at finished grade.

2.5 Valve Box: Refer to Section 15120 – Mechanical Piping, Valves and Appurtenances.

PART 3 – EXECUTION

3.1 Installation: Install valve in accordance with manufacturer's written instructions. Install valve with stem vertical and operating nut on top. Ensure worm gear actuator, stem extension, and operating nut are coaxially aligned. Install valve box plumb and centered over the operating nut. Provide guides or stabilizers as required to prevent lateral movement of the stem extension.

3.2 Field Quality Control: Operate valve through full open and close cycle after installation. Verify smooth operation and proper alignment of operating nut.

3.3 Adjusting and Cleaning: Adjust valve box to finished grade. Clean exposed components and remove debris.

3.4 Protection: Protect installed valve and box from damage until final acceptance.

END OF SECTION

SECTION 15800SEWER GAS EXHAUST SYSTEMPART 1 – GENERAL

1.1 Scope: Provide a complete sewer gas exhaust system consisting of HPCS in-line and wall-mounted fans, Schedule 40 PVC ductwork with solvent-cemented joints, FRP exterior louvers with stainless steel bird screens and dampers where required, vibration isolation, fan and duct support, and all accessories necessary for full operation.

1.2 References:

A. AMCA 210 – Air Movement and Control Association Standard 210, “Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating”

B. AMCA 300 – Air Movement and Control Association Standard 300, “Reverberant Room Method for Sound Testing of Fans”

C. ASTM D1785 – ASTM Standard D1785, “Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120”

D. ASTM D2564 – ASTM Standard D2564, “Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings”

E. ASTM F656 – ASTM Standard F656, “Solvent Cements for Use with PVC Plastic Pipe and Fittings”

F. NFPA 820 – National Fire Protection Association Standard 820, “Standard for Fire Protection in Wastewater Treatment and Collection Facilities”

1.3 Submittals: Submittals shall be provided in accordance with Section 01340 -Shop Drawings, Samples and Project Data. Submit fan data including performance curves, motor information, material certifications, dimensions, and weight. Include FRP and HPCS/316 stainless steel material certifications, manufacturer installation instructions, and operation and maintenance manuals.

1.4 Quality Assurance: Fans shall be provided by a reputable manufacturer with a minimum of ten years’ experience producing corrosion-resistant fans for wastewater/sewer gas service. Fan performance shall be AMCA-certified. All components exposed to sewer gas shall be corrosion-resistant and rated for continuous duty.

PART 2 – PRODUCTS

2.1 In-Line Exhaust Fans: Provide direct-drive, in-line centrifugal fans suitable for sewer gas environments. Fans shall be installed in-line within ductwork set back from the exterior louver; backdraft or isolation dampers are not required. All fan housings, impellers, shafts, and wetted components shall be constructed of High Performance Coated Steel (HPCS), factory-applied and holiday-free. Fans shall be continuously welded, dynamically balanced, and passivated where required. Motors shall be sealed TEFC, minimum 1.25 service factor, and suitable for the classified area if applicable. Capacities, brake horsepower, and electrical requirements shall match the DRAWINGS. Fans shall be furnished with integral inlet and outlet flanges.

2.2 Wall-Mounted Exhaust Fans: Provide direct-drive, centrifugal or propeller-type fans designed to mount directly on exterior wall louvers. Fans shall be corrosion-resistant and constructed of HPCS suitable for continuous sewer gas service. Fans mounted on wall louvers shall include backdraft or isolation dampers. Motors shall be sealed TEFC, minimum 1.25 service factor, and suitable for the classified area. Capacities, brake horsepower, and electrical requirements shall match the DRAWINGS. Louvers shall be sized as shown on the DRAWINGS. Capacity, brake horsepower, and electrical requirements shall match the DRAWINGS.

2.3 Ductwork and Fittings: Ductwork shall be Schedule 40 PVC per ASTM D1785. Fittings shall match duct material and schedule. Joints shall be solvent-cemented using ASTM F656 primer and ASTM D2564 cement. Support ductwork to maintain alignment and prevent sag.

2.4 Connections To Fans and Field-Fabricated Components: PVC duct shall connect to fan flanges using PVC flange adapters or stub ends, bolted with full-face EPDM gaskets. Direct solvent welding to fans is not permitted. Provide flexible connectors where vibration isolation or minor misalignment is required. Field-fabricated components, such as duct-to-louver transitions or custom ductwork, shall be constructed of 26 gage Type 316 stainless steel with flanging to match adjacent components. All field-fabricated joints shall maintain alignment, provide a corrosion-resistant seal, and be compatible with sewer gas service.

2.5 Louvers and Dampers: Exterior louvers shall be constructed of FRP to provide optimal corrosion resistance in sewer gas service, shall be sized as shown on the DRAWINGS, and shall include stainless steel bird screens to prevent entry of birds or debris. Backdraft or isolation dampers are required for fans mounted directly on wall louvers and shall be FRP with corrosion-resistant seals suitable for sewer gas service. Dampers are not required for in-line fans set back from the exterior louver.

2.6 Fan and Duct Support: Ductwork and fans shall be suspended from existing structural steel ceiling members using Type 316 stainless steel uni-strut components, including corrosion-resistant beam clamps, brackets, and hardware. Support systems shall maintain alignment, prevent sag, and resist vibration transmission. All fasteners, hangers, and fittings in contact with fans, ductwork, or supporting members shall be Type 316 stainless steel and compatible with sewer gas service.

PART 3 – EXECUTION

3.1 Installation: Install equipment level and plumb, maintaining manufacturer-recommended clearances. Provide vibration isolation: in-line fans shall have flexible connectors and isolation hangers; wall-mounted fans shall have corrosion-resistant pads or brackets. Suspend ductwork and fans from existing structural steel using 316 stainless steel uni-strut and beam clamps. Seal wall penetrations gas-tight and provide condensate drainage where required.

3.2 Fan Operation and Control: Fans shall operate automatically under the gas detection system and allow normal timed operation as programmed by the gas monitoring system PLC. Provide an exterior manual on-off switch adjacent to the gas monitor to allow operator-controlled activation independent of the PLC or gas detection system. All wiring, interlocks, and switches shall comply with applicable electrical codes. Field testing shall verify correct response to gas detection, timed operation, and manual control.

3.3 Field Quality Control: Verify fan rotation, airflow direction, vibration, and damper operation. Confirm proper response to gas detection, timed PLC operation, and manual on-off switch.

3.4 Installation Tolerances and Performance Verification:

A. Fan and Duct Alignment: Fans and ductwork shall be installed plumb and level. Maximum allowable sag for horizontal duct runs is 1/360 of span, unless otherwise indicated on the DRAWINGS.

B. Vibration Isolation: Vibration isolators, flexible connectors, and hangers shall limit fan-induced vibration transmitted to the structure. Maximum measured vibration at fan mount points shall not exceed 0.25 inches per second (ips) RMS in any axis.

C. Fan Rotation and Direction: Verify correct rotation direction and airflow against the DRAWINGS and manufacturer markings prior to start-up.

D. Electrical and Motor Verification: Motors shall be checked for proper voltage, phase, and amperage per manufacturer requirements. Current draw shall not exceed nameplate rating under full load. Refer to Drawings for motor requirements.

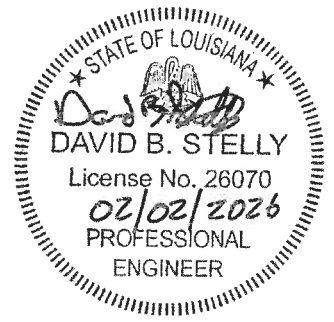
E. Damper Operation: Backdraft and isolation dampers shall operate freely and seal fully in the closed position. Verify damper travel and clearance after installation.

F. Airflow and Performance Testing: Where feasible, verify airflow direction, volume, and static pressure to confirm compliance with the DRAWINGS and manufacturer-rated fan performance.

G. Support Integrity: Confirm that all hangers, brackets, and uni-strut supports are secure, fasteners torqued, and duct/fan alignment maintained within specified tolerances.

H. Gas Detection Interlocks: Confirm automatic fan activation under the gas monitoring system and manual switch operation. Fans shall respond to both the gas detection signal and the timed PLC program as specified.

END OF SECTION



CITY OF PINEVILLE, LOUISIANA

RENOVATIONS TO W.W.T.P. PUMP STATION NO. 1
MAIN PUMP STATION

DIVISION 16 - ELECTRICAL

- Section 16000 - ELECTRICAL - GENERAL PROVISIONS
- Section 16011 - ELECTRICAL - GENERAL REQUIREMENTS
- Section 16110 - RACEWAYS
- Section 16120 - WIRES AND CABLES
- Section 16402 - ELECTRICAL DEVICES
- Section 16450 - GROUNDING SYSTEM
- Section 16610 - STANDBY DIESEL POWER SYSTEM
- Section 16700 - PUMP CONTROL SYSTEMS

SECTION 16000ELECTRICAL - GENERAL PROVISIONSPART 1 - GENERAL1.1 Scope:

A. Furnish all labor, materials, equipment and incidentals required to make ready for use a complete electrical system for the new pumping and control system as hereinafter specified and shown on the Drawings.

B. The work shall include as applicable, but not limited to furnishing, installing, and connecting the following items:

1. Overhead primary service and pole-mounted transformers and secondary service cables will be furnished by the power company for pump stations. Conduit and wiring for the secondary service to the pump station from the weatherhead to the service entrance equipment to be by the CONTRACTOR.

2. Power metering system shall be as shown on the Drawings and in accordance with utility company requirements.

3. Conduit, wire, control equipment and field connections as required for all motors and process equipment furnished under other Divisions of these Specifications.

4. Raceways and fittings.

5. Wires and cables.

6. Miscellaneous equipment and materials.

7. Grounding systems.

8. Pilot devices, various types.

9. Service switches, various types.

10. Installation of the sewage pump control system supplied by the pump manufacturer/supplier and other process and pump control systems.

11. Removal of existing SCADA equipment at the existing pump station, storage during construction, and installation at the new pump station.

C. It is the intent of these Specifications that the electrical system shall be suitable in every way for the service required. All material and all work which may be reasonable

implied as being incidental to the work of this Section shall be furnished under the contract bid price.

1.2 Submittals:

A. As specified in the General Conditions and Section 01340 - SHOP DRAWINGS, SAMPLES AND PROJECT DATA, shop drawings shall be submitted for all materials, equipment, apparatus, and other items as specified and as specifically required under this Section

B. For shop drawing submittals, the manufacturers' names, product designation, catalog numbers, and catalog cuts shall be submitted for all materials.

C. Prior to submittal, all shop drawings shall be checked by the CONTRACTOR for accuracy and coordination with the respective associated electrical devices, and equipment and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list all discrepancies with the Specifications and Drawings. If discrepancies are not noted on the submittals, it shall be the CONTRACTOR'S responsibility to correct any errors and/or omissions. Shop drawings not so checked and denoted shall be returned.

D. The ENGINEER'S check shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawing. The responsibility or the necessity of furnishing materials and workmanship required by the Specifications and Drawings and coordination with all associated crafts, devices, and equipment which may not be indicated on the shop drawings is included the work of this Section.

E. All dimensions shall be confirmed, coordinated, and correlated at each job site with all trades.

F. Material shall not be ordered or shop work started until the ENGINEER'S review of the shop drawings has been given.

1.3 Service and Metering:

A. The power company serving the project is Central Louisiana Electric Company (CLECO).

B. Service will be obtained at voltages as shown on the Drawings from pole-mounted transformers furnished and installed by the power company.

C. Furnish and install the secondary service conduits and connections as specified herein and/or as shown on the Drawings.

D. Furnish and install a complete metering system at each facility as required by the power company. Metering equipment will be provided in accordance with each power company's standard service practice.

E. Make all arrangements with the power company for obtaining temporary and permanent electrical service. Costs for temporary electrical service and maintaining or temporarily relocating the existing electrical services shall be paid by the CONTRACTOR. All costs related to transfer of service, deposit, etc., as required to transfer billings, etc. from the CONTRACTOR to the OWNER shall be borne by the CONTRACTOR.

1.4 Codes, Inspection and Fees:

A. All material and installation shall be in accordance with the latest edition of the National Electrical Code, National Fire Prevention Code, and other applicable town and parish codes and ordinances.

B. CONTRACTOR shall pay all fees required for permits and inspections.

1.5 Tests and Settings:

A. Test all systems furnished, and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the OWNER'S personnel in the proper operation of the systems.

B. Make all circuit breaker and protective relay settings.

C. For grounding systems, secondary systems beginning at the load side of service transformers through power and lighting panels, motor control centers, switchboards, 3-phase motors, and all pump motors, the following minimum tests and checks shall be made prior to the energizing of electrical equipment. Tests shall be by person(s) who are experienced in performing the required tests and whose qualifications meet the approval of the ENGINEER, and certified test report(s) shall be submitted stating that the equipment meets and operates in accordance with the manufacturer's and job specifications, and that equipment and installation conforms to all applicable Standards and Specifications including but not limited to the following:

1. Testing of protective relays and circuit breakers for calibration and proper operations.
2. Over-potential, high-potential, insulation resistance, and shield continuity tests for cables.
3. Mechanical inspection of air interrupter switches and circuit breakers to assure proper operation.
4. Testing to assure proper function of surge suppression equipment.

1.6 Sleeves and Forms for Openings: Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc. Locate all necessary slots for electrical work and form before concrete is poured.

1.7 Cutting and Patching: The CONTRACTOR shall do cutting for installation of electrical facilities with approval of the ENGINEER as to cutting of any structural members. Patching shall be done by the various crafts whose work is involved. Any painting required shall be in accordance with Section 09900 - PAINTING.

1.8 Interpretation of Drawings:

- A. The drawings are not intended to show exact locations of conduit runs.
- B. Each three-phase circuit shall be run in a separate conduit unless otherwise shown on the Drawings.
- C. Unless otherwise approved by the ENGINEER, conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.
- D. Where circuits are shown as "home-runs", necessary fittings and boxes shall be provided for a complete raceway installation.
- E. Any work installed contrary to or without approval by the ENGINEER shall be subject to change as directed by the ENGINEER at no additional cost to the OWNER.
- F. The locations of equipment, fixtures, outlets, and similar devices shown on the Drawings are approximately only. Exact locations shall be as approved by the ENGINEER during construction. Obtain, in the field, all information relevant to the placing of electrical work, and in case of any interference with other work, proceed as directed by the ENGINEER, and furnish all labor and materials necessary to complete the work in an approved manner.
- G. Circuit layouts are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting, and other electrical systems shown. Additional circuits shall be installed wherever needed to conform to the specific requirements of the equipment.
- H. All connections to equipment shall be made as required, and in accordance with the approved shop and setting drawings.

1.9 Size of Equipment:

- A. Investigate each space in the structure through which equipment must pass to reach its final location. If necessary, the manufacturer shall be required to ship his material in sections sized to permit passing through such restricted areas in the structure.
- B. The equipment shall be kept upright at all times. When equipment has to be tilted for ease of passage through restricted areas during transportation, the manufacturer shall be required to brace the equipment suitably, to insure that the tilting does not impair the functional integrity of the equipment.

1.10 Record Drawings: As the work progresses, legibly record all field changes on a set of project contract drawings. These drawings shall be given to the ENGINEER at the completion of the project.

1.11 Component Interconnections:

A. Components of equipment furnished under this Specification will not be furnished as integrated systems.

B. Analyze all systems components and their shop drawings; identify all terminals and prepare drawings or wiring tables necessary for component interconnection. Furnish two copies of initial interconnection. Furnish two copies of initial interconnection wiring diagrams and tables to the ENGINEER for review. Provide final interconnection wiring diagrams and tables as required for record drawings.

C. Furnish and install all component interconnections.

1.12 Materials:

A. The materials used in all systems shall be new, unused and as specified herein. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or manufacturer's specifications shall be submitted for review as requested by the ENGINEER.

B. Materials used shall be listed by Underwriters Laboratories, Inc. Equipment shall be labeled by Underwriters Laboratories, Inc.

C. Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, as determined by the ENGINEER, such damage shall be repaired at no additional cost to the OWNER. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through such special tests as approved by the ENGINEER or shall be replaced as directed by the ENGINEER at no additional cost to the OWNER.

1.3 Equipment Identification:

A. All equipment, such as disconnect switches, separately mounted motor starters, control stations, etc., shall be identified by the name of the process equipment or other facility component it serves. Motor control centers, control panels, panelboards, switchboards, switchgear, and other devices shall have nameplates where identified by letter or number on the Drawings.

B. The identified method shall be laminated plastic nameplates. Nameplates shall be not less than $1/16$ " - x $3/4$ " with $3/16$ " high black letters on a white background.

C. Nameplates shall be screw mounted to NEMA 1 enclosures. Nameplates on the

exterior of all other types of enclosures shall be cemented using epoxy or other approved adhesive. Where the equipment size does not have space for mounting a nameplate the nameplate shall be cemented to the adjacent mounting surface. Cemented nameplates shall not be drilled.

PART 2 - PRODUCTS

2.1 Pump Station Lights: LED lights, as specified on the DRAWINGS, shall be installed where shown. Light locations and mounting techniques shall be ENGINEER approved. Lights shall be supported by unistrut bridging between purlins.

PART 3 - EXECUTION (NOT USED THIS PROJECT)

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment: This work will not be measured for payment. The cost of this work shall be included in other items to which it is subsidiary.

- END OF SECTION -

SECTION 16011ELECTRICAL GENERAL REQUIREMENTSPART 1 - GENERAL

1.1 Scope: This section covers general specification related to electrical work under this project.

1.2 Applicable Publications: The publication listed below from a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American National Standard Institute (ANSI) Publications:

C37.20-74 Switchgear Assemblies, Including Metal-Enclosed Bus
(81)

B. Institute of Electrical and Electronic Engineers (IEEE) Publications:

100-1984 Standard Dictionary of Electrical and Electronic Terms

C. National Electrical Manufacturers Association (NEMA) Publications:

ICS 6-83 Enclosures for Industrial Controls and Systems
(R 2/86)

D. National Fire Protection Association (NFPA) Publication:

70-1990 National Electrical Code

1.3 Submittals: Provide data specified in accordance with SECTION 01340 - SHOP DRAWINGS, SAMPLES AND PROJECT DATA.

A. Shop Drawings: Drawings shall include complete ratings information, wiring diagrams, and installation details of equipment indicating proposed locations, layout and arrangement, control panels, accessories, piping, ductwork and other items that must be shown to assure a coordinated installation. Wire diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. If equipment is disapproved, revise drawings to shown acceptable equipment and resubmit.

- B. Manufacturer's Data: Submittals for each manufactured items shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts.
- C. Publication Compliance: Where equipment or materials are specified to conform to industry and technical society publications of organizations such as the American National Standard Institute (ANSI), American Society for Testing and Materials (ASTM), and Underwriters Laboratories (UL), submit proof of such compliance. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the ENGINEER. In lieu of the label or listing, submit a certificate from an approved independent testing organization, adequately equipped and competent to perform such services, stating that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's publications.
- 1.4 Delivery and Storage: Handle, store and protect equipment and materials in accordance with the manufacturer's recommendations. Replace damaged or defective items with new items.
- 1.5 Cataloged Products Service Availability: Materials and equipment shall be current products by manufacturers regularly engaged in production of such products. Products shall have been satisfactory commercial or industrial used for two (2) years prior to bid opening. The two (2) year period shall include applications of equipment and materials under similar circumstances and of similar size. The two (2) year period shall be satisfactorily completed by a product for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures. Products having less than a two (2) year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6,000 hours, exclusive of the manufacturer's factory or laboratory tests, is furnished. The equipment items shall be supported by service organizations which are reasonable convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.
- 1.6 Manufacturer's Recommendations: Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations shall be cause for rejection of the material.

PART 2 - PRODUCTS

2.1 Materials and Equipment: All materials, equipment, and devices shall, as a minimum, meet the requirements of UL where UL standards are established for those items, and the requirements of NFPA 70. All items shall be new unless specified or indicated otherwise.

2.2 Nameplates: Provide laminated plastic nameplates for each panelboard, equipment enclosure, relay, switch and device. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the black core. Minimum size of nameplates shall be 1.0 inch by 2.5 inches. Lettering shall be a minimum of 0.25-inch high normal block style.

PART 3 - EXECUTION

3.1 Nameplate Mounting: Provide number, location and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two (2) sheet-metal screws or two rivets.

3.2 Painting of Equipment:

A. Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.

B. Field Applied: Paint electrical equipment as required to match finish or to meet safety criteria.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment: This work will not be measured for payment. The cost of this work shall be included in other items to which it is subsidiary.

- END OF SECTION -

SECTION 16110

RACEWAYS

PART 1 - GENERAL

1.1 Scope: Furnish and install complete raceway systems as shown on the Drawings and as specified herein.

1.2 Applications:

- A. Except where otherwise shown on the Drawings, or hereinafter specified, all wiring shall be in rigid steel conduit.
- B. All conduit of a given type shall be the product of one manufacturer.
- C. Unless otherwise hereinafter specified or shown on the Drawings, all boxes shall be metal.
- D. Exposed switch, outlet and control station boxes and fittings shall be cast or malleable iron.
- E. Concealed switch, outlet and control station boxes shall be pressed steel.
- F. Terminal boxes, junction boxes, pull boxes, etc., used in areas designated as NEMA 1 shall be galvanized sheet steel.
- G. Combination expansion-deflection fittings shall be used where conduits cross structure expansion joints. Refer to Drawings for expansion joint locations.
- H. Conduit wall seals shall be used where conduits penetrate walls.
- I. Where conduits pass through openings in walls or floor slabs, the openings shall be sealed against the passage of flame and smoke and gas.

PART 2 - PRODUCTS2.1 Materials:A. Rigid Metal Conduit:

- 1. Rigid metal conduit shall be for use under the provisions of N.E.C. Article 346.

2. Rigid steel conduit shall be hot-dipped galvanized after threading and be as manufactured by the Allied Tube and Conduit Corp., Wheatland Tube Company, Triangle PWC, Inc. or approved equal.

B. Liquid-tight, Flexible Metal Conduit, Couplings and Fittings.

1. Liquid-tight, flexible metal conduit shall be for use under the provisions of N.E.C. Article 351A.

2. Liquid-tight, flexible metal conduit shall be Sealtite, Type UA, manufactured by the Anaconda Metal Hose Division, Anaconda American Brass Company, American Flexible Conduit Company, Inc., Universal Metal Hose Company, or approved equal.

3. Fittings used with flexible conduit shall be of the screw-in type as manufactured by the Thomas and Betts Company, Crouse-Hinds Company, or approved equal.

C. Boxes and Fittings:

1. Pressed steel switch and outlet boxes shall be hot-dipped galvanized as manufactured by the Raco Manufacturing Company, Adalet Company, O.Z. Manufacturing Company, or approved equal.

2. Terminal boxes, junction boxes, pull boxes, etc. for NEMA I locations shall be sheet steel unless otherwise herein or shown on the Drawings. Boxes shall be galvanized and have continuously welded seams. Welds shall be ground smooth and galvanized. Box bodies shall be flanged and shall not have holes or knockouts. Box bodies shall not be less than 14 gauge metal and covers shall not be less than 12 gauge metal. Covers shall be gasketed and fastened with stainless steel screws. Boxes shall be as manufactured by Hoffman Engineering Company, O-Z Gedney (800) 621-1506, or approved equal. Conduit connections shall be by conduit hubs only.

3. Cast or malleable iron device boxes shall be Type FD. Cast or malleable iron boxes and fittings shall have cadmium-zinc finish, threaded conduit connections, cast covers, and stainless steel screws as manufactured by the Crouse-Hinds Company, Appleton Electric of Rosemont, IL (800)621-1506, or approved equal.

4. Steel elbows and couplings shall be hot-dipped galvanized.

5. Conduit hubs shall be as manufactured by Myers Electric Products, Inc., Raco Div., Appleton Electric Company, or approved equal.

6. Combination expansion-deflection fittings shall be Type XD as manufactured by the Crouse-Hinds Company, Appleton Electric of Rosemont, IL (800)621-1506, or approved equal.
 7. Conduit sealing bushings shall be Type CSB as manufactured by OZ/Gedney, Hoffman Engineering Company of Anoka, Minnesota, or approved equal.
 8. Cable fittings shall be Type EYS as manufactured by Crouse-Hinds, Appleton Electric of Rosemont, IL (800)621-1506, or approved equal.
- D. Conduit Mounting Equipment: Hangers, rods, backplates, beam clamps, etc., shall be hot-dipped galvanized iron or steel. They shall be as manufactured by the Appleton Electric Company, Thomas and Betts Company, Unistrut Corporation, or approved equal.
- E. Wall and Floor Slab Opening Seals: Wall and floor slab openings shall be sealed with "FLAME-SAFE" as manufactured by Thomas and Betts Company, 3M, or approved equal.

PART 3 - EXECUTION

3.1 Installation:

- A. No conduit smaller than ½" electrical trade size shall be used, nor shall any have more than three (3) 90° bends in any one run between ends or pull boxes. Pull boxes shall be provided as required or directed by the ENGINEER.
- B. No wire shall be pulled until the conduit system is complete in all details and has been shown to be free of obstructions by pulling an appropriately sized mandrel through the completed conduits; in the case of concealed work, until all rough plastering or masonry has been completed; in the case of exposed work, until the conduit system has been completed in every detail.
- C. The ends of all conduits shall be tightly plugged to exclude dust and moisture until the time to install the wires.
- D. Conduit supports shall be spaced at intervals of eight (8') feet or less, as required to obtain rigid construction.
- E. Single conduits shall be supported by means of one-hole pipe clamps in combination with one-screw back plates, to raise conduits from the surface. Multiple runs of conduits shall be supported on trapeze type hangers with steel horizontal members and threaded hanger rods. The rods shall be not less than, 3/8-inch diameter.

F. Conduit hangers shall be attached to structural steel by means of beam or channel clamps. Where attached to concrete surfaces, embedded concrete inserts of the continuous slot type shall be used.

G. All conduits on exposed work shall be run at right angles to and parallel with the surrounding wall and shall conform to the form of the ceiling. No diagonal runs will be allowed. Bends in parallel conduit runs shall be concentric. All conduit shall be run straight and true.

H. Conduit terminating in pressed steel boxes shall have double locknuts and insulated bushings.

I. Conduit terminating in gasketed enclosures shall be terminated with conduit hubs.

J. Conduits shall be installed using threaded fittings. Threadless fittings may be used in isolated instances and only when approved in writing by the ENGINEER.

K. Liquid-tight flexible metal conduit shall be used for all motor terminations and other equipment where vibration is present except hazardous locations.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment: This work will not be measured for payment. The cost of this work shall be included in other items to which it is subsidiary.

- END OF SECTION -

SECTION 16120WIRES AND CABLESPART 1 - GENERAL

1.1 Scope: Furnish, install and test all wire, cable and appurtenances as shown on the Drawings and as hereinafter specified.

1.2 Submittals:

A. Samples of proposed wire shall be submitted for approval. Each sample shall have the size, type of insulation and voltage printed on the jacket.

B. Approved samples will be sent to the project location for comparison by the Resident Engineer with the wire actually installed.

C. Installed but unapproved wire shall be removed and replaced at no additional cost to the OWNER.

1.3 Applications (600 Volts or Less):

A. Wire for lighting, receptacles, and other circuits No. 10 and smaller shall be NEC type THHN/THWN, stranded.

B. Wire for circuits No. 8 and larger shall be NCC type THW, or THWN, stranded.

C. Wire for control circuits shall be NEC type THHN/THWN No. 14, stranded.

D. Ground wire installed in raceways shall be NEC type THW, green. Ground wires shall be bare where shown on the Drawings.

1.4 Minimum Sizes: Except for control, signal, and instrumentation circuits, wire smaller than No. 12 AWG shall not be used.

PART 2 - PRODUCTS

2.1 Materials:

A. Wires and cables shall be of annealed, 98% conductivity, soft drawn copper.

B. All conductors shall be stranded.

2.2 600-Volt or Less Wire and Cable:

A. Types THHN/THWN, THW and USE wire shall be as manufactured by the Collyer Insulated Wire Company, Pirelli Cable Corporation, or approved equal.

B. Multi-conductor control cable shall be stranded, 600 Volt, cross linked polyethylene insulated, neoprene jacketed, Firewall III as manufactured by the Cerro Wire and Cable Company, Allied Wire & Cable of Collegeville, PA (800)472-4655, or approved equal.

2.3 600 - Volt Splices: Splice insulators shall be PST Cold Shrink as Manufactured by the Minnesota Mining and Manufacturing Company, 3M, or approved equal.

2.4 Wire and Cable Markers:

A. Wire and cable markers shall be “Omni-Grip” as manufactured by the W.H. Brady Company, G-Type Push on Wire Markers as manufactured by Tyco Electronics 1(800)522-6752, or approved equal..

B. Wire and cables with diameters exceeding the capacity of the push on wire markers shall be marked with pre-printed, self-adhesive vinyl tapes as manufactured by the W.H. Brady Company, Tyco Electronics 1(800)522-6752, or approved equal.

2.5 Fire-Proofing Tape: Fire-proofing tape shall be Scotch No. 77 with Scotch No. 27 binding as manufactured by 3M, 53 Plyarc as manufactured by Plymouth Rubber Company, Inc. of Canton, Massachusetts (781) 828-0220, or approved equal.

PART 3 - EXECUTION

3.1 Installation:

A. All conductors shall be carefully handled to avoid kinks or damage to conductors and insulation.

B. All wires, cables and each conductor of multi-conductor cables (except lighting and receptacle wiring) shall be uniquely identified at each end with wire and cable markers.

C. Lubrications shall be used to facilitate wire pulling. Lubricants shall be U.L. approved for use with the insulation specified.

D. Opening in slabs and walls through which wires and cables pass shall be sealed.

E. Where cables pass through walls or floor slabs, the remaining openings shall be sealed against the passage of flame, smoke, and gas.

3.2 Tests: All 600-volt wire insulation shall be tested with a megohm meter after installation. Tests shall be made at not than 500 volts. Submit a written test report of the results to the ENGINEER.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment: This work will not be measured for payment. The cost of this work shall be included in other items to which it is subsidiary.

- END OF SECTION -

SECTION 16402ELECTRICAL DEVICESPART 1 - GENERAL

1.1 Applicable Publications: The publications listed below from a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- A. Federal Specification (Fed. Spec.):
- | | |
|----------|---|
| W-S-896E | Switch, Toggle (Toggle and Lock), Flush Mounted |
|----------|---|
- B. Natural Electrical Manufacturers Association (NEMA) Publications:
- | | |
|-------------------------|--|
| KS1-1975
(Rev. 6-81) | Enclosed Switches |
| ST20-1992
(Rev. 97) | Dry Type Transformers for General Applications |
| WD1-1979
(Rev. 2.81) | General Purpose Wiring Devices |
- C. National Fire Protection Association (NFPA) Publications:
- | | |
|---------|--------------------------------|
| 70-2005 | National Electrical Code (NEC) |
|---------|--------------------------------|
- D. Underwriter's Laboratories, Inc. (UL) Publications:
- (All UL Publications shall be current editions published and available in print on the date of advertisement of this contract.)
- | | |
|------|---|
| 50 | Cabinets and Boxes |
| 67 | Panel Boards |
| 486A | Wire Connectors and Soldering Lugs for Use with Copper Conductors |
| 489 | Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures |
| 510 | Insulating Tape |
| 514 | Outlet Boxes and Fittings |

869 Service Equipment

943 Ground - Fault Circuit - Interrupters

1.2 General Requirements: Section 16011 - Electrical General Requirements, applies to this Section with additions and modifications specified herein. In each of the standards referred to herein, consider the advisory provisions to be mandatory, as though the work “shall” had been substituted for “should” wherever it appears. Interpret reference in these standards to the “authority having jurisdiction”, or words of similar meaning, to mean the ENGINEER.

1.3 Submittals: Provide data specified in accordance with Section 01340 - Shop Drawings, Samples and Project Data.

PART 2 - PRODUCTS

2.1 Materials and Equipment, General: All materials, equipment, and devices shall, as a minimum, meet the requirements of UL where UL standards are established for those items, and the requirements of NFPA 70. All items shall be new unless specified or indicated otherwise.

2.2 Outlet Boxes and Covers: UL 514A, cadmium or zinc coated.

2.3 Cabinets, Junction Boxes, and Pull Boxes (With Volume Greater than 100 Cubic Inches): UL 50, hot-dip zinc-coated if of sheet steel.

2.4 Splices and Termination Components: UL 486A for wire connectors, and UL 510 for insulating tapes. Connectors for wires No. 10 AWG and smaller shall be insulated pressure-type in accordance with UL 486A or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.

2.5 Device Plates: Provide UL listed, one-piece device plates for outlets to suit the devices installed. For metal outlet boxes, plates on unfinished walls shall be of zinc-coated sheet steel or cast metal having round or beveled edges. Plates installed in wet locations shall be gasketed and UL listed for “wet locations”.

2.6 Switches:

A. Toggle Switches: UL 20, totally enclosed with bodies of thermosetting plastic and mounting strap. Handles shall be ivory. Wiring terminals shall be screw-type, side-wired. Switches shall be rated quiet-type AC only, 120/277 volts, with 20 amp current rating and number of poles indicated.

B. Disconnect Switches: NEMA KS 1. Provide heavy duty-type switches where indicated, where switches are rated higher than 240 volts, and for double-throw switches. Fused switches shall utilize Class R fuseholders and fuses, unless indicated otherwise. Switches serving as motor-disconnect means shall be horsepower rated. Provide switches in NEMA 3R stainless steel enclosure per NEMA ICS 6.

2.7 Receptacles: UL 498 and NEMA WD 1, specification grade, heavy-duty, grounding type. Ratings and configurations shall be as indicated. Bodies shall be of ivory thermosetting plastic supported on a metal mounting strap. Dimensional requirements shall be per NEMA WD 6. Provide screw-type, side-wired wiring terminals. Connect grounding pole to mounting strap.

A. Weatherproof Receptacles: Provide in cast metal box with gasketed, weatherproof, cast-metal cover plate and gasketed cap over each receptacle opening. Provide caps with a spring-hinged flap. Receptacle shall be UL listed for use in “wet locations with plug in use.”

B. Ground-Fault Circuit Interrupter (GFI) Receptacles: UL 943, duplex type for mounting in standard outlet box. Device shall be capable of detecting current leak of 6 milliamperes or greater and tripping per requirements of UL 943 for Class A GFI devices.

2.8 Panel Board: UL 67 and UL 50. Panel board shall be circuit breaker-equipped. Design shall be such that individual breakers can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as means of obtaining clearances as required by UL. Where “space only” is indicated, make provisions for future installation of breaker-sized as indicated. Directories shall indicate load served by each circuit of panel board. Directories shall also indicate source of service (upstream panel, switchboard, motor control center, etc.) to panel board. Type directories and mount in holder behind transparent protective coating. Enclosure shall be NEMA 3R stainless steel.

A. Panel Board Buses: Support bus bars on bases independent of circuit breakers. Main buses and back pans shall be designed so that breakers may be changed without machining, drilling, or tapping. Provide isolated neutral bus in each panel for connection of circuit neutral conductors. Provide separate ground bus identified as equipment grounding bus per UL 67 for connecting conductors; bond to steel cabinet.

B. Circuit Breakers: UL 489, thermal magnetic-type having a minimum short-circuit current rating equal to the short-circuit current rating of the load center in which the circuit breaker shall be mounted. Breaker terminals shall be UL listed as suitable for type of conductor provided.

2.9 Transformers: NEMA ST 20, general purpose, dry-type, self-cooled, ventilated. Provide transformers in NEMA 1 enclosure. Transformer shall have 220 degrees C insulation system, with temperature rise not exceeding 115 degrees C under full-rated load in maximum ambient of 40 degrees C. Transformer shall be capable of carrying continuously 115 percent of nameplate kVA without exceeding insulation rating.

PART 3 - EXECUTION

3.1 Installation:

A. General Requirements: Electrical installations shall conform to the requirements of NFPA 70 and to the requirements specified herein.

B. Boxes, Outlets and Supports: Provide boxes in the wiring or raceway systems wherever required for pulling wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be of the cast-metal hub type when located in normally wet locations and when surface mounted on outside of exterior surfaces. Each box shall have the volume required by NFPA 70 for the number of conductors enclosed in the box.

1. Pull Boxes: Construct of not less than the minimum size required by NFPA 70 of code-gage aluminum or galvanized sheet steel, except where cast-metal boxes are required in locations specified above. Furnish boxes with screw-fastened covers. Where several feeders pass through a common pull box, tag the feeders to indicate clearly the electrical characteristics, circuit number and panel designation.

C. Splices: Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller with an insulated pressure type connector. Make splices in conductors No. 8 AWG and larger with a solderless connector and cover with an insulation material equivalent to the conductor insulation.

D. Covers and Device Plates: Plates shall be installed with an alignment tolerance of 1/16 inches. The use of sectional type device plates will not be permitted. Plates installed in wet locations shall be gasketed.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment: This work will not be measured for payment. The cost of this work shall be included in other items to which it is subsidiary.

- END OF SECTION -

SECTION 16450GROUNDING SYSTEMPART 1 - GENERAL

1.1 Scope: Furnish all labor, materials, equipment and incidentals required and install a complete grounding system for Cedar Lake Pump Station in strict accordance with Article 250 of the National Electrical Code and as hereinafter specified and shown on the Drawings.

PART 2 - PRODUCTS2.1 Materials:

- A. Conduit shall be as specified under Section 16110 - RACEWAYS.
- B. Wire shall be as specified under Section 16120 - WIRES & CABLES.
- C. Ground rods: Ground rods for electrical equipment shall be 5/8" x 10' galvanized. Ground rods shall be Copperweld, Blackburn-Copper Bonded, or approved equal.

PART 3 - EXECUTION3.1 Installation:

- A. Grounding electrode conductors shall be run in rigid steel conduits. The protecting conduits shall be bonded to the grounding electrode conductors at both ends.
- B. Grounding conductors shall be run with all feeders and branch circuits.
- C. Liquid tight flexible metal conduit in sizes 1 ½ inches and larger shall have bonding jumpers. Bonding jumpers shall be external, run parallel (not spiraled) and fastened with plastic tie wraps.
- D. Grounding electrodes shall be driven as required.
- E. All equipment enclosures, motor and transformer frames, conduits systems, cable armor, exposed structural steel and similar items shall be grounded.
- F. Exposed connections shall be made by means of approved grounding clamps. Exposed connections between different metals shall be sealed with No-Oxide Paint Grade A or Equal. All buried connections shall be made by welding process equal to Cadwell.

G. All underground conductors shall be laid slack and where exposed to mechanical injury, shall be protected by pipes or other substantial guards. If guards are iron pipe or other magnetic material conductors shall be electrically connected to both ends of the guard. Connections shall be made as hereinbefore specified.

H. Care shall be taken to insure good ground continuity, in particular between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

3.2 Tests: Test the ground resistance of the system. All test equipment shall be provided under this Section and approved by the ENGINEER. Dry season resistance of the system shall not exceed five ohms. If such resistance cannot be obtained with the system as shown, provide additional grounding as directed by the ENGINEER, without additional payment.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Method of Measurement and Payment: This work will not be measured for payment. The cost of this work shall be included in other items to which it is subsidiary.

- END OF SECTION -

SECTION 16610STANDBY DIESEL POWER SYSTEMPART 1 - GENERAL

1.1 Description of System: Provide a standby power system to supply electrical power in event of failure of normal supply, consisting of a liquid cooled engine, an AC alternator and system controls with all necessary accessories for a complete operating system, including but not limited to the items as specified hereinafter.

1.2 Requirements of Regulatory Agencies:

A. An electric generating system, consisting of a prime mover, generator, governor, coupling and all controls, must have been tested, as a complete unit, on a representative engineering prototype model of the equipment to be sold.

B. The generator set must conform to applicable National Electrical Code and applicable inspection authorities.

1.3 Manufacturer Qualifications:

A. This system shall be supplied by Generac Power Systems® or an approved equal who has been regularly engaged in the production of engine-alternator sets, automatic transfer switches, and associated controls for a minimum of twenty years, thereby identifying one source of supply and responsibility.

B. To be classified as a manufacturer, the builder of the generator set must manufacture, at minimum, engines or alternators.

C. The manufacturer shall have printed literature and brochures describing the standard series specified, not a one of a kind fabrication.

1.4 Substitutions: The emergency power system has been designed to the specified manufacturer's electrical and physical characteristics. The equipment sizing, spacing, amounts, electrical wiring, ventilation equipment, fuel and exhaust components have all been sized and designed around Generac Power System's equipment. MTC, Cummins, Kohler and Caterpillar are approved equal. Should any other substitutions be made, the contractor shall bear responsibility for the installation, coordination and operation of the system as well as any engineering and redesign costs which may result from such substitutions.

1.5 Submittals: Provide three complete sets of Engineering Submittal for approval, prior to production release, showing all components, in addition to the engine and generator. Submittals shall include compliance with these specifications

PART 2 - PRODUCTS

2.1 Engine-Generator Set:

A. Engine:

1. The prime mover shall be a liquid cooled, natural gas fueled, naturally aspirated engine of 4-cycle design. It will have 6 cylinders with a minimum displacement of 6.7 liters (408 cubic inches). The unit requires a minimum rated output of 150 kW.
2. The engine is to be cooled with a unit mounted radiator, fan, water pump, and closed coolant recovery system providing visual diagnostic means to determine if the system is operating with a normal engine coolant level.
3. The intake air filter(s) with replaceable element must be mounted on the unit. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have a replaceable oil filter(s) with internal bypass and replaceable element(s). Engine coolant and oil drain extensions, equipped with pipe plugs, must be provided to outside of the mounting base for cleaner and more convenient engine servicing. A fan guard must be installed for personnel safety.
4. The engine shall have a battery charging DC alternator with a transistorized voltage regulator. Remote 2-wire starting shall be by a solenoid shift, electric starter
5. Engine speed shall be controlled by isochronous governor to maintain alternator frequency within 0.5% from no load to full load alternator output. Steady state regulation is to be 0.25%.
6. The engine fuel system shall be designed for primary operation on natural gas having a BTU content of 1000 BTU per cubic foot delivered to the unit in a vapor state. A carburetor, secondary regulator, fuel lock-off solenoid and all piping must be installed at the point of manufacturing, terminating at a single pipe opening external to the mounting base.
7. The engine shall have (a) unit mounted, thermostatically controlled water jacket heater(s) to aid in quick starting. The wattage shall be as recommended by the manufacturer. The contractor shall provide proper branch circuit from normal utility power source.
8. Sensing elements to be located on the engine for low oil pressure shutdown, high coolant temperature shutdown, low coolant level shutdown, overspeed shutdown and overcrank shutdown. These sensors are to be connected to the control panel using a wiring harness with the following features: wire number labeling on each end of the wire run for easy identification, a molded rubber boot to cover the electrical connection on each sensor to prevent corrosion and all wiring to be run in flexible conduit for protection from the environment and any moving objects.

9. Provide the following items installed at the factory:
 - a. The manufacturer shall supply its recommended stainless steel, flexible connector to couple the engine exhaust manifold to the exhaust system.
10. The following equipment is to be provided by the engine-generator set manufacturer and shipped loose with the unit:
 - a. The manufacturer will supply its recommended flexible fuel line to connect the engine to the external natural gas fuel supply line. On stationary applications the fuel line shall match the fuel fitting on the unit and have braided stainless steel covering with brass fittings.

B. Alternator:

1. The alternator shall be a 4 pole revolving field type, 12 lead, wired for 277/480 VAC, 3 phase, 60 hz, rated at 150 kw with a permanent magnet driven exciter. Photosensitive components will not be permitted in the rotating exciter. The stator shall be gear drive connected to the engine to insure permanent alignment. The generator shall meet temperature rise standards for Class "H" insulation, operate within Class "F" standards for extended life. All leads must be extended into an AC connection panel. The alternator shall be protected by internal thermal overload protection and an automatic reset field circuit breaker.
2. One step load acceptance shall be 100% of engine-generator set nameplate rating and meet the requirements of NFPA 110 paragraph 5-13.2.6. The generator set and regulator must sustain at least 90% of rated voltage for 10 seconds with 300% of rated load at near zero power factor connected to its terminals when equipped with direct or brushless excitation. Generators equipped with permanent magnet exciters not allowing the selection of the short circuit current ratings are not allowed.
3. A solid state voltage regulator designed and built by the alternator manufacturer must be used to control output voltage by varying the exciter magnetic field to provide + or - 1% regulation during stable load conditions. Should an extremely heavy load drop the output frequency, the regulator shall have a voltage droop of 4 Volts/Hertz to maximize motor starting capability. The frequency at which this droop operation begins must be adjustable, allowing the generator set to be properly matched to the load characteristics insuring optimum system performance. Additional rheostats for matching generator voltage, droop, and stability characteristics to the specific load conditions must be available.
4. The voltage regulator must contain a limiting circuit to prevent output voltage surges in excess of 125% of rated voltage during generator set operation. On loss or near loss of the voltage sensing signal, the voltage regulator must be capable of shutting down to prevent an overvoltage condition from occurring. It must have a second mode of operation allowing 300% of rated current to flow through the electrical distribution circuit(s) for ten (10) seconds under the same conditions. Voltage regulators not capable of selecting either mode of operation are not acceptable. LED indication will be provided

on the regulator to monitor the sensing (yellow), excitation (green), and output circuit (red).

5. A NEMA 1 panel that is an integral part of the generator set must be provided to allow the installer a convenient location in which to make electrical output connections. A fully rated, isolated neutral must be included by the generator set manufacturer to insure proper sizing.

6. The electric plant shall be mounted with vibration isolators on a welded steel base that shall permit suitable mounting to any level surface.

7. Provide the following items installed at the factory:

- a. A main line circuit breaker carrying the UL mark shall be factory installed. The breaker shall be rated at 200 amps and mounted in the genset connection box. The line side connections are to be made at the factory. Output lugs shall be provided for load side connections. A system utilizing manual reset field circuit breakers and current transformers is unacceptable.

C. Controls:

1. All engine alternator controls and instrumentation shall be designed, built, wired, tested and shock mounted in a NEMA 1 enclosure to the engine-generator set by the manufacturer. It shall contain panel lighting, a fused DC circuit to protect the controls and a +/-5% voltage adjusting control. This panel must be able to be rotated 90 degrees in either direction for correct installation.

D. Unit Accessories:

1. The following equipment is to be installed at the engine-generator set manufacturer's facility:

- a. A heavy duty, lead acid 12vdc battery set rated at 700 CCA, BCI group 27F shall be installed by the generator set manufacturer. Provide all intercell and connecting battery cables as required.
- b. Provide a 2 amp automatic float battery charger manufactured by the engine-generator set supplier. It is to be of a solid state design and self regulating to prevent overcharging the system battery. The battery charger is to be factory installed on the generator set. Due to line voltage drop concerns, a battery charger mounted in the transfer switch will be unacceptable.
- c. Provide a double wall base tank integral with the generator. Tank shall be UL 142 compliant. Tank shall incorporate threaded pipe connections, float switch, and fuel gauge. Provide flexible fuel connections to the engine. Tank size shall provide for 48 hours of run time at full load. Fill tank to 90% capacity with #2 diesel at time of acceptance.

2.2 Automatic Transfer Switch:

A. General:

1. The automatic transfer switch shall be furnished by the manufacturer of the engine-generator set so as to maintain system compatibility and local service responsibility for the complete emergency power system. It shall be listed by Underwriter's Laboratory, Standard 1008 with circuit breaker protection. Representative production samples of the transfer switch supplied shall have demonstrated through tests the ability to withstand at least 10,000 mechanical operation cycles. One operation cycle is the electrically operated transfer from normal to emergency and back to normal. Wiring must comply with NEC table 373-6(b). The manufacturer shall furnish schematic and wiring diagrams for the particular automatic transfer switch and a typical wiring diagram for the entire system.

B. Ratings & Performance:

1. The automatic transfer switch shall be a 3 pole design, for 200 amps continuous operation in ambient temperatures of -20 degrees Fahrenheit (-30 degrees Celsius) to +140 degrees Fahrenheit (+60 degrees Celsius). Main power switch contacts shall be rated for 600 V AC minimum. The transfer switch supplied shall have a minimum withstand and closing rating when fuse protected of 200,000 amperes. These RMS symmetrical fault current ratings shall be the rating listed in the UL listing or component recognition procedures for the transfer switch. All withstand tests shall be performed with the overcurrent protective devices located external to the transfer switch.

C. Construction:

1. The transfer switch shall be double throw construction, positively electrically and mechanically interlocked to prevent simultaneous closing and mechanically held in both normal and emergency positions. Independent break before make action shall be used to positively prevent dangerous source to source connections. When switching the neutral, this action prevents the objectionable ground currents and nuisance ground fault tripping that can result from overlapping designs. The transfer switch shall be approved for manual operation. The electrical operating means shall be by electric solenoid. Every portion of the contactor is to be positively mechanically connected. No clutch or friction drive mechanism is allowed, and parts are to be kept to a minimum. This transfer switch shall not contain integral overcurrent devices in the main power circuit, including molded case circuit breakers or fuses.

2. The transfer switch electrical actuator shall have an independent disconnect means to disable the electrical operation during manual switching. Maximum electrical transfer time in either direction shall be 160 milliseconds, exclusive of time delays. Main switch contacts shall be high pressure silver alloy with arc chutes and separate arcing contacts to resist burning and pitting for long life operation.

D. Controls:

1. All control equipment shall be mounted on the inside of the cabinet door in a metal lockable enclosure with transparent safety shield to protect all solid state circuit boards. This will allow for ease of service access when main cabinet lockable door is open, but to prevent access by unauthorized personnel. Control boards shall have installed cover plates to avoid shock hazard while making control adjustments. The solid state voltage sensors and time delay modules shall be plug-in circuit boards with silver or gold contacts for ease of service.
2. A solid state undervoltage sensor shall monitor all phases of the normal source and provide adjustable ranges for field adjustments for specific application needs. Pick-up and drop-out settings shall be adjustable from a minimum of 70% to a maximum of 95% of nominal voltage. A utility sensing interface shall be used, stepping down system voltage of 120/240 vac 1 phase to 24VAC, helping to protect the printed circuit board from voltage spikes and increasing personnel safety when troubleshooting.
3. Signal the engine-generator set to start in the event of a power interruption. A set of contacts shall close to start the engine and open for engine shutdown. A solid state time delay start, adjustable, .1 to 10 seconds, shall delay this signal to avoid nuisance start-ups on momentary voltage dips or power outages.
4. Transfer the load to the engine-generator set after it reached proper voltage, adjustable from 70-90% of system voltage, and frequency, adjustable from 80-90% of system frequency. A solid state time delay, adjustable from 5 seconds to 3 minutes, shall delay this transfer to allow the engine-generator to warm-up before application of load. There shall be a switch to bypass this warm-up timer when immediate transfer is required.
5. Retransfer the load to the line after normal power restoration. A return to utility timer, adjustable from 1-30 minutes, shall delay this transfer to avoid short term normal power restoration.
6. The operating power for transfer and retransfer shall be obtained from the source to which the load is being transferred. Controls shall provide an automatic retransfer of the load from emergency to normal if the emergency source fails with the normal source available.
7. Signal the engine-generator to stop after the load retransfers to normal. A solid state engine cooldown timer, adjustable from 1-30 minutes, shall permit the engine to run unloaded to cooldown before shutdown. Should the utility power fail during this time, the switch will immediately transfer back to the generator.
8. Provide an engine minimum run timer, adjustable from 5-30 minutes, to ensure an adequate engine run period.
9. Provide a solid state plant exercise clock. It must allow selection of any combination of days of the week and the time of day for the generator set exercise period. Clock shall have a one week cycle and be powered by the load side of the transfer switch. A battery must be supplied to maintain the circuit board clock operation when the load side of

the transfer switch is de-energized. Include a switch to select if the load will transfer to the engine-generator set during the exercise period.

10. The transfer switch shall have a time delay neutral feature to provide a time delay, adjustable from .1-10 seconds, during the transfer in either direction, during which time the load is isolated from both power sources. This allows residual voltage components of motors or other inductive loads (such as transformers) to decay before completing the switching cycle. A switch will be provided to bypass all transition features when immediate transfer is required.

11. The transfer switch shall have an inphase monitor which allows the switch to transfer between live sources if their voltage waveforms become synchronous within 20 electrical degrees within 10 seconds of transfer initiation signal. A switch must be provided to bypass this feature if not required.

12. If the inphase monitor will not allow such a transfer, the control must default to time delay neutral operation. Switches with inphase monitors which do not default to time delay neutral operation are not acceptable.

13. Front mounted controls shall include a selector switch to provide for a NORMAL TEST mode with full use of time delays, FAST TEST mode which bypasses all time delays to allow for testing the entire system in less than one minute, or AUTOMATIC mode to set the system for normal operation.

14. Provide bright lamps to indicate the transfer switch position in either UTILITY (white) or EMERGENCY (red). A third lamp is needed to indicate STANDBY OPERATING (amber). These lights must be energized from utility or the engine-generator set.

15. Provide manual operating handle to allow for manual transfer. This handle must be mounted inside the lockable enclosure so accessible only by authorized personnel.

16. Provide a safety disconnect switch to prevent load transfer and automatic engine start while performing maintenance. This switch will also be used for manual transfer switch operation.

17. Provide LED status lights to give a visual readout of the operating sequence. This shall include utility on, engine warm-up, standby ready, transfer to standby, inphase monitor, time delay neutral, return to utility, engine cooldown and engine minimum run. A "signal before transfer" lamp shall be supplied to operate from optional circuitry.

E. Miscellaneous Transfer Switch Equipment:

1. The transfer switch mechanism and controls are to be mounted in a NEMA 1 enclosure.

PART 3 - EXECUTION

3.1 Factory Testing:

A. Before shipment of the equipment, the engine-generator set shall be tested under rated load for performance and proper functioning of control and interfacing circuits. Tests shall include:

1. Verifying all safety shutdowns are functioning properly
2. Verify single step load pick-up per NFPA 110-1996, Paragraph 5-13.2.6.
3. Verify transient and voltage dip responses and steady state voltage and speed (frequency) checks

3.2 Owner's Manuals: Six (6) sets of owner's manuals specific to the product supplied must accompany delivery of the equipment. General operating instruction, preventive maintenance, wiring diagrams, schematics and parts exploded views specific to this model must be included.

3.3 Installation: Contractor shall install the complete electrical generating system including all fuel connections in accordance with the manufacturer's recommendations as reviewed by the Engineer.

3.4 Service: Supplier of the electric plant and associated items shall have permanent service facilities in this trade area. These facilities shall comprise a permanent force of factory trained service personnel on 24 hour call, experienced in servicing this type of equipment, providing warranty and routine maintenance service to afford the owner maximum protection. Delegation of this service responsibility for any of the equipment listed herein will not be considered fulfillment of these specifications. Service contracts shall also be available.

3.5 Warranty: The standby electric generating system components, complete engine-generator and instrumentation panel shall be warranted by the manufacturer against defective materials and factory workmanship for a period of 24 months. Such defective parts shall be repaired or replaced at the manufacturer's option, free of charge. Travel and labor shall be included for the first 12 months. The warranty period shall commence when the standby power system is first placed into service. Multiple warranties for individual components (engine, alternator, controls, etc.) will not be acceptable. Satisfactory warranty documents must be provided. Also, in the judgment of the specifying authority, the manufacturer supplying the warranty for the complete system must have the necessary financial strength and technical expertise with all components supplied to provide adequate warranty support.

3.6 Startup And Checkout:

A. The supplier of the electric generating plant and associated items covered herein shall provide factory trained technicians to checkout the completed installation and to perform an initial startup inspection to include:

1. Ensuring the engine starts (both hot and cold) within the specified time.
2. Verification of engine parameters within specification.
3. Verify no load frequency and voltage, adjusting if required.
4. Test all automatic shutdowns of the engine-generator.
5. Perform a load test of the electric plant, ensuring full load frequency and voltage are within specification by using building load. Simulate loss of electric power and

demonstrate that generating plant will start, the transfer switch will transfer, and that the generating plant can start and run three 35 HP pumps.

END OF SECTION

SECTION 16700PUMP CONTROL SYSTEMSPART 1 - GENERAL

1.1 Description: This section covers a complete Triplex Pump Station Electrical Control Systems as hereinafter described and all necessary appurtenances which might normally be considered a part of the complete electrical system for this installation. It shall be factory assembled, wired and tested and covered by complete electrical drawings and instructions.

1.2 Quality Assurance and Qualifications:

A. To assure unity of responsibility, the pumps, motors, VFD's and pump control panels shall be furnished by the pump supplier. The CONTRACTOR and the manufacturer shall assume responsibility for the satisfactory installation and operation of the entire pumping system including pumps, motors, starters and controls as specified.

B. The Supplier shall maintain quality in design and workmanship as well as materials used in manufacture of equipment supplied. All equipment supplied under this Contract shall be of new manufacture.

C. The Supplier shall be a firm that is engaged in the manufacturing of process control systems. The system shall be in regular production with pre-designed hardware and software for process control systems. When the specification conflicts with a manufacturer's standard system, the standard system may be furnished if the intention of the specification is met.

D. System shall be a standard system. Custom one of a kind application software and customized hardware components will not be accepted. A standard system is defined as one which is available, at time of bid, with fully tested hardware and software, full documentation, and prepared training classes such that no development must be done beyond system configuration.

E. Supplier shall be responsible for detailed engineering, manufacture, programming, test, start-up and demonstration of all equipment and software programs to the Owner to provide a complete operating system.

F. The manufacturer shall have been continuously involved in the design and manufacture of control systems for the past ten (10) years. The manufacturer shall have successfully built and placed into operation, systems similar to the one proposed herein and will furnish a list of at least ten (10) operating installations upon request by the Engineer.

G. Provide all engineering and render coordination assistance, necessary for calibration of overall control system and to resolve interface discrepancies between panels, equipment, instrumentation and final control devices. Where interface conflicts exist, the Supplier shall document conflicts in writing to the OWNER providing absolute information such as terminal numbers, device name, tests performed and diagnosis of problem.

H. Equipment supplied shall be of the most current and proven design at the time of delivery. The completed System and the equipment provided by the Supplier shall be compatible with the functions required and shall be a complete working System.

I. Electrical components of the Control System shall operate on 120 volt, single- phase, 60 Hertz current, except as otherwise noted in the specifications and on the drawings.

J. Signal conditioning, setpoint, control, alternation, logic function, transducer, alarm and all other control functions shall be performed by solid-state modules which shall be standard catalog items of the system manufacturer, with proven field performance.

K. At least one module of each type used in the system shall be stocked by the system manufacturer for system expansions or renewal parts purposes. The modules shall be of a compatible, integrated control family with a full range of control/protective/alternation/telemetry capabilities and associated housings, enclosure system and appurtenances to perform a variety of functions required by this project and foreseeable expansion. It is the intention of this specification to disallow non-standard, "one of a kind", experimental, unproven combinations of equipment.

L. The control unit shall be standard products manufactured and stocked by the control supplier in order to assure one source responsibility, ready availability, proper system interconnections and reliable, long-term operation.

1.3 Submittals: Submit product data in accordance with provisions of Section 01340 – Shop Drawings, Samples, Samples, and Project Data for specified equipment to include at least the following:

A. The complete assembly shall be provided with job-specific wiring diagrams, parts lists, enclosure dimensional and door layout drawings and instructions.

B. Production Schematics shall be submitted for approval for all equipment herein specified. The Production Schematics Submittal shall include a Document List. An Order Specification shall be included which shall describe in detail the major functionality of the equipment being provided as well as components used detailed down to major component level. Each panel shall be provided with a job-specific wiring diagram, parts list, enclosure door layout and enclosure dimension drawing. Manufacturer's wiring diagrams that are not job-specific (standard drawings with options crossed out, etc.) are not acceptable. The wiring diagram requirement applies to all field mounted instrumentation and control equipment. Interconnection details shall be shown for all field-mounted instrumentation. A Description of Operation shall be provided detailing the operation of the complete system, including the control and alarm handling.

C. Certification of U.L. listing of Control Center.

D. Provide As-built Drawings and Instruction Manuals. These manuals shall include corrected Shop Drawings. In addition, a detailed Programming and Operations Manual for the Microprocessor-based Controller Unit shall be included. The manual shall include all information as detailed for the Shop Drawing Submittals above.

1.4 Selected Equipment/Approved Equal: The controls specified under this section are as manufactured by Dynamic Motor Controls and Xylem Water Solutions as locally represented by Gulf States Engineering Co., Inc. of Covington, Louisiana (318-445-6810).

1.5 Operation and Maintenance Manuals: Complete Operation and Maintenance Manuals shall be provided in accordance with Section 01730 – Operation and Maintenance Manual.

1.6 Startup Services: The services of a factory trained, qualified representative shall be provided to inspect the completed installation, make all adjustments necessary to place the system in trouble-free operation and instruct the operating personnel in the proper care and operation of the equipment. After each system has been installed, the Supplier shall demonstrate with performance of each unit, and document that the system operates properly as specified. The Supplier shall provide systems training for operations staff totaling no less than 2 hours. All training shall be conducted at the site. Travel expenses are the responsibility of the supplier.

1.7 Equipment Guaranty: Equipment shall be guaranteed against defects in material and workmanship for a period from the date of Owner's final inspection and acceptance to the effect that any defective equipment shall be repaired or replaced without cost or obligation to the Owner.

PART 2 - PRODUCTS

2.1 General Requirements:

A. U. L. Serialized Label

1. The control panel(s) shall be constructed in compliance with Underwriter's Laboratories Categories 698A and 913 standards – “Enclosed Industrial Control Panel Relating to Hazardous Locations with Intrinsically Safe Circuit Extensions” listing and following-up service. The control panel(s) shall bear the Underwriter's Laboratories serialized label for “Enclosed Industrial Control Panel Relating to Hazardous Locations with Intrinsically Safe Circuit Extensions”.

2. Prior to shipment from the manufacturer's facility to the jobsite for installation, an Underwriter's Laboratories (U.L.) representative shall inspect the completed control panel(s). Upon successful completion of the inspection, the panel shall be assigned the required “Enclosed Industrial Control Panel Relating to Hazardous Locations with Intrinsically Safe Circuit Extensions” serialized U.L. label, indicating the equipment is built in accordance with the practices and requirements of the Underwriter's Laboratories 698A and 913 categories.

3. While the use of U.L. listed components is encouraged, their use alone and/or the alternate use of a U.L. 508A – “Enclosed Industrial Control Panel” serialized label will not be considered an acceptable or satisfactory alternate to the “Enclosed Industrial Control Panel Relating to Hazardous Locations with Intrinsically Safe Circuit Extensions” serialized label specified above. Upon request from the Engineer, the panel manufacturer shall supply documentation to the owner proving they are a

U.L. recognized manufacturing facility for the type of equipment required. Only the labeled products of U.L.698A and 913 “Enclosed Industrial Control Panel Relating to Hazardous Locations with Intrinsically Safe Circuit Extensions” recognized panel manufacturer shall be considered acceptable for use on this project.

B. Wiring:

1. Wiring shall be minimum 600 volt UL type MTW or AWM and have a current-carrying capacity of not less than 125% of the full load current. The conductors shall be in complete conformity with the national electric codes, state, local and NEMA electrical standards. For ease of servicing and maintenance, all wiring shall be color-coded. The wire color code shall be clearly shown on the drawings, with each wire's color indicated. In addition, the equipment wiring shall be permanently marked with wire numbers that correspond to the system schematics. The numbering convention shall comply with the municipal industry standard.

2. Control wiring shall be contained within plastic/PVC wiring duct with covers. Where dimensional constraints prevent the use of wiring duct, wires shall be trained to panel components in groupings. The wire groupings shall be bundled and tied not less than every 3 inches with nylon self-locking cable ties as manufactured by Panduit or equal.

3. Every other cable tie shall be fastened to the enclosure door or inner device panel with a cable tie mounting plate with pressure tape. Where wiring crosses hinged areas such as when trained from the inner device panel to the enclosure door, spiral wrap shall be used.

C. Incoming Service:

1. The service pole, metering, and service entrance rated automatic transfer switch will be installed ahead of the lift station control panel as provided by the electrical contractor. Conduit and wiring between the power company termination and the lift station shall be furnished and installed by the contractor.

2. Each panel shall be supplied with a properly sized control power circuit breaker. The breaker shall supply power to all control wiring within the enclosure.

D. Nameplates: All major components and sub-assemblies shall be identified as to function with laminated, engraved bakelite nameplates, or similar approved means.

2.2 Control System:

A. Enclosure: The NEMA 3R stainless steel control panel shall house integral liquid level control, moisture and thermal protection modules and/or PLC and will be provided with the minimum of the following:

1. Hand-Off-Automatic switches to select the operating mode for each pump installed on the control panel inner deadfront door.

2. Elapsed time meters for each pump motor.
3. In the event any pump operation selector switch is in the “Off” position, the control system software shall automatically designate the operating pump motor as the “next pump motor to operate” after that pump motor is started.
4. The hinged inner door shall be provided fabricated from, 5052-H32.080, marine alloy aluminum. The hinged inner door shall contain cutouts for all circuit breaker toggles. Control switches and indicators shall be labeled and mounted to the hinged inner door to keep operators from entering the live electrical compartment. A warning sign stating “DANGER -- Disconnect All Sources Of Power Before Opening Door” shall be installed on the inner door. The inner door shall be completely removable for ease of service and shall be held closed by at least (2) hand operated 1/4 turn fasteners. The following items shall be mounted on the inner door:
 - Pilot lights – Alarm, Pump Run, Pump Fail
 - Hand-Off-Automatic

B. Variable Frequency Drives:

1. A Variable Frequency pump drive shall be provided for each pump in the system, sized for the appropriate voltage and power. The pump drive shall be supplied by the pump manufacturer and designed for wastewater pumping and with functionality pre-programmed for the specific pump model used or a PLC of equivalent functionality shall be provided. The pump drive shall provide all level control functionality, hand/auto operation, pump alternation, pump over temperature monitoring, seal leakage monitoring, pump self-cleaning, sump cleaning and pipe cleaning algorithms. The pump drive shall also include capability to monitor station inflow, pump speed and energy consumption in order to automatically operate the pump station at optimal energy efficiency.

The pump drive shall be tested and approved in accordance with national and international standards and comply with Directive 98/37/EC, Safety of Machinery and EN60204-1. It shall conform to the relevant safety provisions of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC and has been designed and manufactured in accordance with the following harmonized European standards:

EN 61800-5-1: 2003	Adjustable speed electrical power drive systems. Safety requirements. Electrical, thermal and energy.
EN 61800-3 2nd Ed: 2004	Adjustable speed electrical power drive systems. EMC requirements and specific test methods
EN 55011: 2007	Limits and Methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment (EMC)
EN60529 : 1992	Specifications for degrees of protection provided by enclosures

The variable frequency drive ampere rating shall be equal to or greater than the ampere rating listed on the motor being driven by the variable frequency drive.

2. The drive units shall be modularly constructed. Printed circuit boards shall be connected in such manner that they are easily removed from the unit. Power components shall be readily accessible and be connected in such manner that they are easily removed from the unit. The pump drive shall be freestanding for wall mounting or cabinet installation construction, for 480V, 60HZ 3Phase power supply. It holds an IP55 and IP66 isolation class.

C. System Operation – VFD or PLC functionality

1. High/Low Level Sump Control: The pump controls system shall provide automatic level control via means of a submersible pressure transducer (4-20mADC) and one (1) non-mercury liquid level float switch. User-programmable Start Level shall indicate the point at which the pump will start. Upon activation the pump shall run at maximum speed for a pre-determined period, then ramp down to the energy efficient Optimal speed, calculated by the pump drive. When the water level reaches the Stop Level, the pump shall stop. The Optimal Speed shall either be calculated by the pump drive or manually entered by the user.

In case of high inflow, the pump drive shall increase pump speed until the water level begins to decrease. When the water level reaches the Stop Level, the pump shall stop.

In case of very high inflow, in a triplex installation, when a single pump is unable to overcome the inflow conditions even at maximum speed, additional pumps shall be activated and run at maximum speed until the Stop Level is reached. If water levels continue to rise, a High Level Alarm shall be activated.

The pump drive shall incorporate a Minimum Speed function that prevents the pump from operating at speeds too low to move water based on the pump curve.

2. Run Time Averaging (Triplex Application Only): In cases of triplex pumps/drives, the pump drive shall provide capability to balance run times for even wear. This shall be an internal function of the drive and not require external devices, such as an Alternating Relay. The function shall operate by determining a “random” start level based on the Start Level setting. Each drive shall determine its own random start level independent of each other. New random start levels will be determined every 24 hours. The pump with the lowest random start level shall be first to start on any given pump cycle. The second pump shall remain in Standby capacity in case the lead pump shall not be able to lower the water level as described in the section above. By recalculating the random start levels every 24 hours, balanced run times are accomplished.

3. Pump Cleaning Function: The Pump drive shall incorporate a “self-cleaning” function to remove debris from the impeller. The cleaning shall be triggered by three circumstances:

- Soft Clogging: When motor current equals 20% or greater above rated motor

- current, in the drive, for a period of 7 seconds.
- **Hard Clogging:** When motor current equals 80% or greater above rated current for a period of 0.01 seconds.
- **Schedule Cleaning:** The pump drive is pre-programmed to perform cleaning regularly.

The cleaning function shall consist of forced stopping, reversal and forward runs timed to allow for debris to fall from the impeller. After cleaning cycle is complete, drive shall resume automatic operation.

4. **Sump Cleaning Function:** The pump drive shall incorporate a sump cleaning function to ensure surface solids and grease is regularly removed from the sump. The sump cleaning function shall perform regularly when enabled by the operator. Sump cleaning shall consist of the following functions:

- Sump cleaning is triggered when internal timer expires and during a normal pump down cycle.
- Pump is automatically ramped to maximum speed.
- Pump runs at maximum speed for designated time or until the pump are “snoring”.
- When Sump Cleaning is over, the pump is shut off and resumes normal operation.

5. **Pipe Cleaning Function:** The pump drive shall incorporate a pipe cleaning function to avoid discharge pipe sedimentation and clogging due to reduced pump speed. This shall be an automatic feature that initiates with every pump cycle. Upon reaching Pump Start Level, the drive shall operate the pump at 100% speed for a determined time before ramping down to the most energy efficient speed for the duration of the cycle.

6. **Energy Efficient Speed Finder:** The pump drive shall provide a function that automatically calculates the most energy efficient speed for the pump based on station inflow characteristics. An algorithm calculates the optimal speed whereby the most water is pumped using the least amount of energy, the optimal speed is constantly adjusted to account for changes inflow without requiring operator adjustment, multiple setpoints, etc.

The energy efficient function prevents the drive from running off of the system curve for the pump. This will ensure maximum hydraulic efficiency as well as electrical efficiency is maintained.

7. **Alarms & Monitoring:** The pump drive shall provide alarms and monitoring for the drive, pump and sump. Alarms shall be presented on the LCD display, via a Summary Alarm relay and via Modbus registers. All alarms, when occurring, shall remain active until reset. Alarms shall have a built-in 4 second delay to prevent nuisance tripping. Alarms shall be as follows:

- **Pump Monitoring:**
 - Pump Over Temperature (thermal contacts in motor stator)

- Pump Seal Leak (Flygt FLS leakage sensor)
- Sump Monitoring:
 - High Sump Level (via level float switch or submersible transducer)
 - Submersible transducer Sensor Error (Submersible transducer is not connected, reports faulty values or the wrong start level is used)
- Pump drive Monitoring (includes, but not limited to):
 - Drive Overcurrent
 - Drive Overload Trip
 - Drive Undervoltage
 - Drive Overvoltage
 - Drive Overtemperature (Internal)
 - Drive Overtemperature (ambient)
 - Drive Undertemperature (ambient)
 - Input Phase Loss
 - Drive Output Max Torque Exceeded

2.3 Expert 3400 Submersible Level Transducer:

1. The liquid level of the wet well shall be sensed by a submersible level transducer. The transducer shall be a 2-wire type to operate from the level controller's regulated loop power supply and produce an instrumentation signal (4-20mA) in direct proportion to the measured level excursion over a factory-calibrated range of zero to (30) feet of water.
2. The transducer shall be of the ceramic capacitive, relative pressure sensing type, suitable for continuous submergence and operation and shall be installed in accordance with manufacturer's instructions. The bottom diaphragm face of the sensor shall be installed approximately 6 inches above the wet well floor. The sensor shall be hung in the wet well using a cable bracket including two sliding cable locking jaws in a location in the wet well and as shown on the job plans.
3. The transducer housing shall be fabricated of PPS (polyphenylene sulfide) with a ceramic bottom diaphragm.
4. The transducer element shall incorporate high over-pressure protection and be designed to withstand intermittent overpressures (10) times the full-scale range being sensed. Metallic diaphragms shall not be acceptable in that they are subject to damage or distortion. Sensing principles employing LVDTs, resistive or pneumatic elements shall not be acceptable.
5. The internal pressure of the lower transducer assembly shall be relieved to atmospheric pressure through a heavy-duty urethane jacketed hose/cable assembly and a slack PVC bellows mounted in the control panel. The sealed breather system shall compensate for variations in barometric pressure and expansion and contraction of air due to temperature changes and altitude as well as prevent fouling from moisture and other corrosive elements.
6. The transducer assembly shall be installed where directed by the Engineer and connected with other system elements and placed in successful operation

7. The transducer shall have a programming feature using a standard USB interface and a laptop computer, the servicing transmitter can be programmed on-the-fly to the required measuring range. The design without sharp edges prevents particles, textiles and paper from sticking to the housing or the diaphragm. The transducer shall be surge resistant.

8. The transducer power cable shall be steel reinforced PUR cable with high tensile strength (2,000 lb).

2.4 Local Alarm System: A remote mounted weatherproof, strobe alarm indication light assembly with shatter resistant polycarbonate red lens mounted on a polycarbonate/ABS blend case shall be provided. The alarm light shall be NEMA 4X rated, suitable for indoor or outdoor mounting and operate on 120 VAC and be PLC rated. The strobe tube shall provide a minimum of 300,000 peak candela output and shall be rated for 3,000 hour life. The alarm light shall flash upon occurrence of an alarm condition. The unit shall shipped separately and connected via terminal strip in the pump control panel.

2.5 Condensation Protective Heater: A 100 watt, 120 VAC condensation protective heater and adjustable high temperature cutout thermoswitch shall be supplied in the control panel. The heater's surface area for heat dissipation shall be large enough to prevent a skin burn (if an operator's hand should inadvertently come in contact with the unit when energized). The heater shall be regulated by a humidistat located within the control panel enclosure.

2.6 Back-Up Level Control: Backup sump level controls shall be a float system operated by one (1) float switch. The float switches shall be utilized for pump stop and pump start/high water level. The float switches shall be mechanical type switch, potted in a solid polyurethane float, with two (2) conductor No. 16 flexible cord (Type SJOW). Float switches shall be normally open type with contacts rated at 3 amps for 115 or 230 volts.

PART 3 - EXECUTION

3.1 Inspection:

A. Inspect all equipment upon arrival at job site and prior to installation. Notify manufacturer of any damage and/or shortage.

B. Inspect concrete mounting pads and anchor bolts for correct size and alignment prior to installation.

3.2 Panel Protection: The pump control panel shall be protected at all times. The pump control panel shall be maintained in an upright position at all times. Lifting shall be only at the floor sills or the top mounting lifting angles. All nameplates shall be properly protected during painting. Equipment and material shall be suitably delivered and stored and shall be readily accessible for inspection. All items subject to moisture damage shall be stored in dry spaces. All material and equipment shall be protected against dirt, dust, water and chemical or mechanical injury, vandalism and theft.

3.3 Field Wiring: Field installed interior wiring shall be neatly grouped by circuit and bound by plastic tie wraps. Circuit groups shall be supported such that circuit termination points are not stressed.

3.4 Installation:

A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the Drawings.

B. The CONTRACTOR shall submit a certificate from the equipment manufacturer stating that the installation of the equipment is satisfactory, that the equipment is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

3.5 Inspection and Testing:

A. General:

1. The ENGINEER shall have the right to inspect, test or witness tests of all materials or equipment to be furnished under these Specifications, prior to their shipment from the point of manufacturer.
2. The ENGINEER shall be notified in writing prior to initial shipment, in ample time so that arrangements can be made for inspection by the ENGINEER.
3. Field tests shall not be conducted until such time that the entire installation is complete and ready for testing.

3.6 Operation of Triplex System: On sump level rise, the first set-point shall first be energized, then the second set-point shall next be energized and start the lead pump. With the lead pump operating, sump level shall lower until the first set-point is de-energized and the pump shall stop. The alternating relay shall index on the stopping of lead pump so that the lag pump will start on the next operation. If the sump level continues to rise when the lead pump is operating, the third set-point shall energize and start the lag pump. Both the lead and the lag pumps shall operate together until the first set-point is de-energized and both pumps shall stop. If the sump level continues to rise with both pumps operating, the fourth set-point shall start the lag-lag pump. If the sump level continues to rise with three pumps operating, the fifth set point shall energize and signal the alarm light and bell.

- END OF SECTION -

