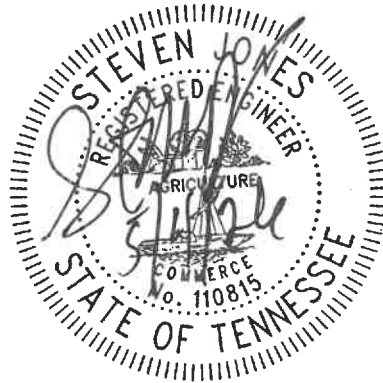


**VOLUME I OF  
CONTRACT DOCUMENTS  
FOR THE**

**CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS**

**WYNFIELD PUMP STATION MODIFICATIONS**



**WATER MANAGEMENT SERVICES, LLC  
2 INTERNATIONAL PLAZA, SUITE 401  
NASHVILLE, TENNESSEE 37217  
(615) 366-6088  
Fax (615) 366-6203**

**WMS No. 26116**

CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS

WYNFIELD PUMP STATION MODIFICATIONS

CONTRACT DOCUMENTS - TABLE OF CONTENTS

<u>VOLUME I</u>	<u>PAGES</u>
A. <u>PROPOSAL SECTION</u>	
1. Invitation to Bid	1-4
2. Instructions to Bidders	1-5
3. Proposal Form	1-4
4. Bid Bond Form	1
5. Statement of Compliance – Drug Free Workplace	1-3
6. Statement of Compliance – Illegal Immigrant	1-3
7. Statement of Compliance – Non-Boycott of Isreal	1-2
8. Statement of Compliance – Iranian Divestment Act	1-2
9. Non-Collusion Affidavit	1
10. List of Subcontractors	1
11. Statement of Experience	1
B. <u>AGREEMENT SECTION</u>	
1. Supplementary Conditions of Contract	1-6
2. General Conditions of Contract	1-65
3. Agreement Form	1-4
4. Contractor's Forms	
a. Performance Bond	1-3
b. Payment Bond	1-3
c. Affidavit	1
d. Certificate of Insurance	1
C. <u>CONTRACT SPECIFICATIONS</u>	
Division 1- General Requirements	
Division 16- Electrical	
Division 22- Pump Controls	

VOLUME II

CONTRACT DRAWINGS

**PROPOSAL SECTION**

CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS

INVITATION TO BID  
FOR  
CONSTRUCTION OF

WYNFIELD PUMP STATION MODIFICATIONS

RECEIPT OF PROPOSALS

Sealed Proposals for the construction of the Wynfield Pump Station Modifications project, will be received at the office of the City of Mt. Juliet Finance Department located at City Hall at 2425 North Mt. Juliet Road, Mt. Juliet, Tennessee 37122, Attention: Ms. Dana Hire, Finance Director, on or before 2:00 p.m. local time on Tuesday, May 26, 2026 and immediately thereafter all bids will be publicly opened and read aloud.

Sealed envelopes containing Proposals shall be marked "Proposal for the City of Mt. Juliet, Tennessee, Department of Public Works, Wynfield Pump Station Modifications." Bidders must be licensed by the State of Tennessee to perform the work required. The envelope containing the bid shall be marked to show the bidder's Tennessee Contractor's license number, expiration date and the part of the classification applying to the bid, otherwise the bid will not be opened. No Proposal will be considered unless it is made on the Proposal form, which is included in the Contract Documents. The Proposal must not be removed from the Contract Documents with which it has been bound by the City of Mt. Juliet, Tennessee. This Proposal must be addressed as indicated in the previous paragraph. It shall be the Bidder's responsibility that the envelope be properly addressed to ensure that the proposal is received on or before the appropriate time.

The project will include the following described construction:

Furnishing and installation of the components for the replacement of the existing pumps, drives, and pump controls at the Wynfield Pump Station including all required bypass pumping, electrical modifications, and appurtenances as required for a complete operational installation.

CONTRACT DOCUMENTS

City of Mt. Juliet  
Department of Public Works (Sewer)  
71 East Hill Street  
Mt. Juliet, Tennessee 37122

Builders Exchange of Tennessee  
301 Perimeter Park Drive, Suite 100, Office 9  
Nashville, Tennessee 37211

Water Management Services, LLC  
2 International Plaza, Suite 401  
Nashville, Tennessee 37217

Nashville Contractor's Association  
7430 Burleson Lane  
Murfreesboro, Tennessee 37129

Official (numbered) Bid Documents shall be obtained at the office of Water Management Services, LLC; 2 International Plaza, Suite 401; Nashville, Tennessee 37217 (telephone: (615-366-6088). A fee of \$50.00 must be made for each set obtained.

CITY OF MT. JULIET - TITLE VI COMPLIANCE

It is the policy of the City of Mt. Juliet to provide equal employment opportunities and to provide its programs, activities, and services to all individuals regardless of race, color, religion, sex, national origin, age disability, or status in any other group protected by law. Inquiries and charges of violation of this policy should be directed to the City Manager at (615) 754-2552 or at 2425 North Mt. Juliet Road, P.O. Box 256, Mt. Juliet, Tennessee 37121. Requests for accommodation of a disability should be directed to the City Manager at (615) 754-2552 or at 2425 North Mt. Juliet Road, P.O. Box 256, Mt. Juliet, Tennessee 37121.

## BID SECURITY

Each Proposal shall be accompanied by a certified or cashier's check or a satisfactory bid bond payable to the City of Mt. Juliet, Tennessee in an amount not less than five (5) percent of the Base Bid as a guarantee that the bidder will, within fifteen (15) days after the date of the award of the Contract, execute an Agreement and file bonds and insurance as required by the Contract Documents if his Proposal is accepted.

If an intended awardee fails to execute and file an Agreement, bonds and insurance as required by the Contract Document, the entire amount of the security submitted with the Proposal shall be forfeited.

## LICENSE

Subject to the provisions of Chapter 6 of Title 62 of the Tennessee Codes Annotated, the Contractor's attention is directed to the Tennessee Codes Annotated Section 62-6-119 which states that it will be necessary for each bidder and their subcontractors to show evidence of a license before his bid will be considered and that the license number, expiration date, and that part of classification applying to the bid appear on the envelope containing the bid; otherwise the bid shall not be opened.

### "62-6-119. Bid documents – Penalties

(a) Any person or entity preparing plans, specifications or any other documentation for inclusion in an invitation to bid or comparable bid document including any electronic bidding documents, shall reference this chapter in such documentation and include a specific statement informing the invited bidder that it is necessary for such bidder to be properly licensed at the time of the bid and provide evidence of compliance with the applicable provisions of this chapter before such bid may be considered.

(b) The person or entity involved in the preparation of the invitation to bid or comparable bid documents, including any electronic bid documents, shall direct that the following information be written upon the bid envelope or provided within the electronic bid document:

(1) The name, license number, expiration date, thereof, and license classification of the contractor applying to bid for the prime contract.

(2) The name, license number, expiration date thereof, and license classification of the contractor applying to bid for the masonry contract where the total cost of the materials and labor for the masonry portion of the construction project exceeds one hundred thousand dollars (\$100,000);

(3) The name, license number, expiration date thereof, and license classification of the contractor applying to bid for the electrical, plumbing, heating, ventilation, or air conditioning contracts except when such contractor's portion of the construction project is less than twenty-five thousand dollars (\$25,000);

(4) For each vertical closed loop geothermal heating and cooling project, the company name, department of environment and conservation license number, classification (G, L, or G,L) and the expiration date, except when the geothermal portion of the construction project is in an amount less than twenty-five thousand dollars (\$25,000);

(5) Prime contractor bidders who are to perform the masonry portion of the construction project which exceeds one hundred thousand dollars (\$100,000), materials and labor, the electrical, plumbing, heating, ventilation or air conditioning or the geothermal heating and cooling must be so designated; and

(6) Only one (1) contractor in each of the classifications listed above shall be written on the bid envelope provided or provided within the electronic bid document.

(c) Failure of any bidder to furnish the required information shall void such bid and such bid shall not be considered. Upon opening of the bid envelope or initial opening of an electronic bid, the names of all contractors listed shall be read aloud at the official bid opening and incorporated into the bid. Prior to awarding a contract, the awarding person or entity and its authorized representative shall verify the accuracy, correctness and completeness of the required information, and any discrepancies found in the spelling of names of bidders, transposition of license numbers, or any similar typographical errors or omissions may be corrected within forty-eight (48) hours after the bid opening excluding weekends and state-recognized holidays.

(d) No invitation to bid may require that any subcontractor be identified, listed or designated until the final bid submission by the prime contractor, or that any prime contractor accept the bid of any subcontractor until the final bid submission by the prime contractor. This subsection (d) shall only apply to design/bid/build procurements where cost is the primary criterion for the contract award.

(e) Any person or entity, public, or private, awarding a bid to a contractor who is not licensed in accordance with this chapter shall be subject to the penalty provided in § 62-6-120(b).

(f) Notwithstanding the Uniform Administrative Procedure Act, compiled in title 4, chapter 5, relative to the amount of civil penalties that may be imposed, the board may impose a civil penalty not to exceed five thousand dollars (\$5,000) for willful violation of this section.

HISTORY: Acts 1976, ch 822, § 20; T.C.A., § 62-620; Acts 1986, ch. 718, § 2; 1989, ch. 591, § 111; 1990, ch 868, § 1, 2; 1991, ch. 247, § 1; 1994, ch. 986, § 13; 1995, ch. 341, § 1; 1997, ch. 153, § 1; 2001, ch. 222, §3; 2008, ch. 792, §§ 1, 2; 2010, ch. 768, §§ 1, 2; 2010, ch 801, § 1; 2011, ch. 12, §§ 1, 2; 2014, ch. 644, §1."

#### ADDENDA AND QUESTIONS CONCERNING BID DOCUMENTS

Subject to the provisions of Chapter 4, Part 1, of Title 12 of the Tennessee Codes Annotated, The Contractor's attention is directed to the Tennessee Codes Annotated Section 12-4-126 which states the following:

"12-4-126

(a) If a statute, ordinance, resolution, rule or regulation mandates the use of competitive bidding of any kind or nature whatsoever, by any state agency, county or municipal corporation, then, notwithstanding such law, ordinance, resolution, rule or regulation, no addenda within less than forty-eight (48) hours of the bid opening date shall be permitted.

(b) Any questions concerning the bid documents must be received by the designer no less than ninety-six (96) hours before bid opening date.

(c) This section shall not apply to the department of transportation contracts or any state or local agency contracts funded in whole or in part with state or federal highway funds."

#### HOLDING OF PROPOSAL

No bid shall be withdrawn after the opening of the proposals without the consent of the City of Mt. Juliet, Tennessee for a period of sixty (60) days after the scheduled time of the closing of bids. The bid securities of all bidders, except those submitted with the three lowest acceptable bidders, will be returned within fifteen (15) days after the time of the opening of the bids. The bid security accompanying the three lowest acceptable proposals may be held by the City of Mt. Juliet, Tennessee until a construction contract has been executed and a satisfactory Performance Bond in the sum of the full amount of the Contract has been delivered to the City of Mt. Juliet, Tennessee.

## TIME FOR COMPLETION

The successful bidder shall be required to fully complete all work within **180** consecutive calendar days from and including the date to start work established in a written order from the City of Mt. Juliet, Tennessee.

NOTE: The Contractor's attention is directed to the to the Time for Completion and Liquidated Damages in the Supplementary Conditions and Starting and Completing in the Agreement, in addition to the Excess Cost of Engineering.

## AWARD OF CONTRACT

The award of any Contract will be made by the City of Mt. Juliet, Tennessee to the lowest responsive, responsible bidder. Responsible bidder will be defined as one who furnished satisfactory evidence that the bidder has the experience and the ability and that he has sufficient capital and facilities to enable him to perform the work successfully and to complete the work within the time specified in the Contract Document. At a minimum, a responsible and responsive bidder shall be appropriately licensed by the State of Tennessee, have provided the required bid bond, have the capability of meeting the bond and insurance requirements, and be in compliance with Federal, State and local laws and regulations applicable to the project.

The City of Mt. Juliet, Tennessee reserves the right to reject any proposal for failure to comply with all requirements of the notice or of any of the Contract Documents; however, it may waive any minor defects or informalities at its discretion. The City of Mt. Juliet, Tennessee further reserves the right to reject all proposals.

Plans and specifications for this project were prepared by Water Management Services, LLC.

CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS

BY: Tim Forkum, Utilities Director

CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS

WYNFIELD PUMP STATION MODIFICATIONS

TABLE OF CONTENTS  
FOR  
INSTRUCTIONS TO BIDDERS

<u>SUBJECT</u>	<u>PAGE</u>
1 Examination of Procurement Documents and Site	1
2 Interpretation of Contract Documents	1
3 Material Substitution	1
4 Preparation of Bid	1
5 Signing of Bid	2
6 Bid Security	2
7 Return of Bid Securities	2
8 Agreement, Bonds, Insurance	2
9 Bid Submittal	3
10 Withdrawal of Bid	3
11 Designation of Subcontractors	3
12 Qualification of Bidders	3
13 Disqualification of Bidders	3
14 License	3
15 Bid Opening	4
16 Award of Contract	4
17 Effective Date of Award	4
18 Execution of Agreement	4
19 Commencement and Completion of Work	4
20 Liquidated Damages	4
21 Payment for Excess Costs	4
22 Existing Facilities	4
23 Safety Standards and Accident Prevention	5
24 Deletions By Owner	5
25 Iranian Disinvestment Act	5
26 Local Permits	5
27 City of Mt. Juliet - Title VI Compliance	5

## INSTRUCTIONS TO BIDDERS

### 1. EXAMINATION OF PROCUREMENT DOCUMENTS AND SITE

- 1.1 Before submitting a Bid, each Bidder must (a) examine the Procurement Documents thoroughly, (b) become familiar with federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress or furnishing the Goods and Special Services, (c) study and carefully correlate Bidder's observations with the Procurement Documents, and (d) if specified, or if, in Bidder's judgment, any local condition may in any manner affect cost, progress or furnishing the Goods and Special Services, visit the site to become familiar with local conditions.
- 1.2 Each bidder, by making his bid, represents that he has visited the site and familiarized himself with all the conditions under which the work is to be performed. No extra compensation will be allowed by reason of any matters or things concerning which the Bidder did not inform himself prior to bidding.
- 1.3 Each bidder, by making his bid, represents that he has read and understands the bidding documents. The bidder shall include in his bid prices any and all costs that may be necessary to complete the work in accordance with the requirements of the Contract Documents.
- 1.4 The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article 1 and that the Procurement Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for furnishing the Goods and Special Services.

### 2. INTERPRETATION OF CONTRACT DOCUMENTS

Questions regarding documents, discrepancies, omissions, or intent of the Specifications or drawings shall be submitted in writing to the Owner, through the Engineer, at least 10 days prior to opening of bids to provide time for issuing and forwarding an addendum. Any interpretation of the Contract Documents will be made only by addendum duly issued or delivered by the Engineer to each person receiving a set of documents. Only those questions answered by The Owner will not be responsible for any other explanations or interpretations of the Contract Documents.

### 3. MATERIAL SUBSTITUTION

Each bidder shall base his bid upon the materials and equipment as described in the bidding documents. The successful contractor will not be allowed to make any substitutions on his own initiative but, in each instance, will be required to obtain authorization from the Engineer before installing any work in variance with the requirements of the Contract Documents.

### 4. PREPARATION OF BID

Only bids which are made out on the bid form included in the Official (numbered) Bid Document will be considered. The bid form must not be separated from this document. Amounts are to be shown in both words and figures. In case of discrepancy between words and figures, the words shall prevail unless it clearly appears, in Owner's opinion, that the words rather than the figures are in error. If any portion of the bid is required to be given in unit prices and totals, the unit prices shall prevail unless it clearly appears, in Owner's opinion, that the unit prices rather than the totals are in error. If a discrepancy exists between the total base bid and the true sum of the individual bid items, the true sum shall prevail. A bid will be rejected if it does not contain a price for each and every item named in the bidding schedule. Bidders are warned against making any erasures or alterations of any kind, and bids which contain omissions, erasures, conditions,

alterations, or additions not called for may be rejected.

The lump sum (base bid) in the Bidding Schedule is based on item (a.) in the Tabulation of Major Equipment Items. The bidder shall, at a minimum, write in a price for item (a.) and is encouraged to write in prices from other manufacturers, since low bidder is determined after equipment selection, provided other manufacturers than that named in item (a.) are determined to be an equal.

#### 5. SIGNING OF BID

If the bidder is a corporation, the legal name of the corporation shall be set forth together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If bidder is a partnership, the true name of the firm shall be set forth together with the signatures of all the partners. If the bidder is an individual, his signature shall be inscribed. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a power of attorney must be on file with the Owner prior to opening bids or submitting bids; otherwise, the bid may be regarded as irregular.

#### 6. BID SECURITY

No bid will be considered unless accompanied by a bid security as defined in the Invitation to Bid as a guarantee that if the bid is accepted, the bidder will execute the Agreement and file bonds and insurance as required by the Contract Documents within 15 days from the date of the award of the Contract.

#### 7. RETURN OF BID SECURITIES

The security of the three lowest bidders will be returned after the execution of the Agreement with the successful bidder and the approval of his bonds and insurance. The security of all other bidders will be returned promptly after the bids have been opened and reviewed by the Owner. If all bids are rejected, the securities will be returned at the time of rejection.

#### 8. AGREEMENT, BONDS, INSURANCE

The attention of bidders is specifically directed to the General Conditions of the Contract and to the forms of agreement and bonds to be executed and types of insurance to be taken out in the event a Contract award is made.

***The attention of bidders is specifically directed to the General Conditions of the Contract relative to the Certificate of Insurance requirements. If the Surety declines to provide the Certificate of Insurance containing the specified cancellation clause verbiage, the Surety shall be required to provide a separate letter to the Owner/Engineer stating that the Surety shall notify the Certificate holder in writing thirty (30) days prior to cancellation, reduction, or change in coverage on this project.***

Surety companies executing bonds shall appear on the U.S. Treasury Department's most current Circular 570 (31 CFR 223), shall be licensed to transact business in the State where the project is located, and shall have an A.M. Best "A" rating or better.

Refer to the following websites for details.

[http://www.fms.treas.gov/c570/c570\\_a-z.html](http://www.fms.treas.gov/c570/c570_a-z.html)  
<http://www.fms.treas.gov/fedreg/31cfr223.1-22.html>  
<http://www.ambest.com/ratings/guide.asp>

9. BID SUBMITTAL

Each bid, properly signed, together with the bid security and all documents bound herewith, shall be enclosed in a sealed envelope addressed and entitled as specified in the Invitation to Bid and delivered to the office designated in the Invitation to Bid. All addenda issued shall be included with the documents at the time of bid submittal.

10. WITHDRAWAL OF BID

Any bid may be withdrawn at any time prior to the hour fixed in the invitation to bid for the opening of bids, provided that a request in writing, executed by the bidder or his duly authorized representative, for the withdrawal of such bid is filed with the Owner prior to the time specified for opening of bids. The withdrawal of a bid will not prejudice the right of a bidder to file a new bid.

11. DESIGNATION OF SUBCONTRACTORS

Each bidder shall list on the form included in these documents the names and addresses of all subcontractors who will perform work or labor or render service to the bidder on or about the construction site in addition to any and all requirements of Chapter 6 of Title 62 of the Tennessee Codes Annotated. Each bidder shall show on the form the portion of the work to be done by each subcontractor.

12. QUALIFICATION OF BIDDERS

It is the intention of the Owner to award a Contract only to a bidder who furnishes satisfactory evidence that he has sufficient capital, facilities, and plant to enable him to prosecute the work successfully and promptly and to complete the work within the time specified in the contract documents. Furthermore, it is the intention of the Owner to award a Contract only to a bidder with a satisfactory record of performance, skill, integrity and judgment. Each bidder shall submit with his bid a listing of past projects including references. A form is provided in the Proposal for listing of this information.

13. DISQUALIFICATION OF BIDDERS

More than one bid for the same work described in this document from an individual, firm or partnership, a corporation or an association under the same or different names will not be considered. Reasonable grounds for believing that any bidder is interested in more than one bid for the work contemplated will cause the rejection of all bids in which such bidder is interested. If there are reasonable grounds for believing that collusion exists among the bidders, the bids of the participants in such collusion will not be considered. In addition, if at any time it shall be found that the person, firm, or corporation to whom the Contract has been awarded has, in presenting any bid or bids, colluded with any other party or parties, then the Contract so awarded shall be null and void, and the Contractor and his sureties shall be liable to the Owner for all loss or damage which the Owner may suffer thereby, and the Owner may advertise for new bids for said work. The attention of each bidder is directed to the Non-Collusion form in the Proposal and each bidder shall submit an executed affidavit with his bid.

14. LICENSE

Each bidder shall possess state and local licenses as are required by law and shall furnish satisfactory proof to the Owner upon request that the licenses are in effect during the entire period of the Contract.

15. BID OPENING

Bids will be opened and the prices bid will be read aloud publicly at the time and place indicated in the Invitation to Bid. Bidders or their agents are invited to be present.

16. AWARD OF CONTRACT

The award of any contract or contracts will be made to the lowest responsive responsible bidder or bidders. The Owner reserves the right to reject any or all bids or to waive irregularities or informalities at its discretion.

17. EFFECTIVE DATE OF AWARD

If a contract is awarded by the Owner, such award shall be effective when formal notice of such award, signed by the authorized representative of the Owner, has been delivered to the intended awardee or mailed to him at the main business address shown on his bid by some officer or agent of the Owner duly authorized to give such notice.

18. EXECUTION OF AGREEMENT

Copies of the agreement, in the number stated in the form of Agreement, shall be executed by the successful bidder and returned, together with the required bonds and insurance, within 15 days from and after the date of the award of the Contract. Effective date of bonds shall be the same or later than the date of the Agreement. Failure of a successful bidder to execute the Agreement and file required bonds and insurance within the required time shall be just cause for the annulment of the award. On failure of a successful bidder to execute the Agreement and file the required bonds and insurance within the required time, he shall forfeit his bid security as agreed hereinbefore. Upon annulment of an award as aforesaid, the Owner may then award a Contract to the next lowest, responsible bidder.

The bidder's attention is directed to the Attestation Regarding Personnel Used In Contract Performance certification in the Agreement Section which must be executed by the successful bidder prior to the issuing of the Notice to Proceed on this project.

19. COMMENCEMENT AND COMPLETION OF WORK

The successful bidder shall commence work with 15 calendar days from and after the issuance by Owner of a written Notice to Proceed and shall complete all work in accordance with the terms and conditions of the Contract Documents within **180** calendar days from and after the date of the Notice to Proceed.

20. LIQUIDATED DAMAGES

The Contractor's attention is directed to the Provisions for Liquidated Damages as provided in the Supplementary Conditions and in the Contract Agreement, in addition to Excess Cost for Engineering.

21. PAYMENT FOR EXCESS COSTS

The successful Contractor will be required to pay for the excess cost of field engineering and inspection as defined in the General Conditions of the Contract, if extensions of time are granted by Owner because of avoidable delays as therein defined.

22. EXISTING FACILITIES

The information and data shown or indicated in the Contract Drawings with respect to existing underground facilities is based on available information and record drawings. The

Owner/Engineer shall not be responsible for the accuracy or completeness of such information or record drawings. The Contractor shall have full responsibility for reviewing and checking all such information and data for locating all facilities shown or indicated on the Contract Drawings, for coordinating of the work with the Owner and for the safety and protection thereof and repairing any damage thereto resulting from the work, the cost of which will be considered as having been included in the Contract price.

23. SAFETY STANDARDS AND ACCIDENT PREVENTION

With respect to all work performed under this contract, the Contractor shall:

- a. Comply with the safety standards provisions of applicable laws, building and construction codes and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971.
- b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- c. Maintain at his/her office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

24. DELETIONS BY OWNER

Portions or segments of this work may be deleted by the Owner at their discretion during the course of construction operations because of funding considerations and/or unforeseen or unknown difficult construction conditions which may arise during the course of the work which this Contract does not cover.

25. IRAN DIVESTMENT ACT

In accordance with the Iran Divestment Act, Tennessee Code Annotated § 12-12-101 et seq., Bidders certify that to the best of its knowledge and belief, neither the Bidder nor any subcontractors are on the list created pursuant to Tennessee Code Annotated § 12-12-101.

26. LOCAL PERMITS

The contractor shall be required to purchase all necessary permits necessary for the construction of the project including, but not limited to, City and County building permits.

27. CITY OF MT. JULIET - TITLE VI COMPLIANCE

It is the policy of the City of Mt. Juliet to provide equal employment opportunities and to provide its programs, activities, and services to all individuals regardless of race, color, religion, sex, national origin, age disability, or status in any other group protected by law. Inquiries and charges of violation of this policy should be directed to the City Manager at (615) 754-2552 or at 2425 North Mt. Juliet Road, P.O. Box 256, Mt. Juliet, Tennessee 37121. Requests for accommodation of a disability should be directed to the City Manager at (615) 754-2552 or at 2425 North Mt. Juliet Road, P.O. Box 256, Mt. Juliet, Tennessee 37121.

PROPOSAL TO  
CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS  
WYNFIELD PUMP STATION MODIFICATIONS

Full Name of Bidder \_\_\_\_\_

Main Business Address \_\_\_\_\_

Place of Business \_\_\_\_\_

THE CITY OF MT. JULIET, TENNESSEE (hereinafter called "Owner")

The undersigned, as bidder, declares that the only person or parties interested in this Proposal as principals are those named herein, that this Proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the location of the proposed work, the proposed forms of Agreement and Bonds, and the Contract Drawings and Specifications for the above-designated work, all of which are on file at the City of Mt. Juliet, Tennessee, and all other documents referred to or mentioned in the Contract Documents, the Contract Drawings and Specifications, including Addenda No. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ issued thereto; and he proposes and agrees if this Proposal is accepted that he will contract with the City of Mt. Juliet, Tennessee in the form of the copy of the Agreement included in these Contract Documents to provide all necessary machinery, tools, apparatus and other means of construction, including utility and transportation services necessary to do all the work, and furnish all the materials and equipment specified or referred to in the Contract Documents in the manner and time herein prescribed and according to the requirements of the Owner as therein set forth, furnish the Contractor's Bonds and Insurance specified in the General Conditions of the Contract, and to do all other things required of the Contractor by the Contract Drawings, and that he will take in full payment therefore the sums set forth in the following Bidding Schedule.

I. BIDDING SCHEDULE

A. TOTAL BID

Item No. 1 - Lump Sum

The base bid for the furnishing of all labor, materials and equipment for the Construction Work at the Wynfield Pump Station required for a complete operating installation as described in the Contract Documents for the lump sum of

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents

TOTAL \$ \_\_\_\_\_  
(in figures)

II. PROPOSAL CONDITIONS

- A. It is expressly understood that quantities in the Bidding Schedule for Unit Price Items and Supplemental Unit Priced Items are approximate only and that payment on a Contract will be made only on the actual quantities of work completed in place, measured on the basis defined in the Contract Conditions and the Contract Specifications.
- B. The undersigned has carefully checked the above Bidding Schedule against the Contract Drawings and Specifications before preparing this Proposal and accepts the said quantities to be substantially correct, both as to classification and amount, and as correctly listing the complete work to be done in accordance with the Contract Drawings and Specifications.
- C. If this Proposal is accepted and the undersigned shall fail to contract as aforesaid, and to give the bond for faithful performance required by the General Conditions of Contract and by law, and to provide all insurance as required by the Contract Documents within thirty (30) days after the date of the award of the Contract, the City of Mt Juliet, Tennessee, at its option, determined that the bidder has abandoned this Contract and thereupon this Proposal and the acceptance thereof shall be null and void, and the forfeiture of such security accompanying this Proposal shall operate and the same shall be the property of the City of Mt Juliet, Tennessee.

III. BID SECURITY

Accompanying this Proposal is a \_\_\_\_\_,  
in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

- Note: (a) Insert the words "Cash," "Cashier's Check," "Certified Check" or "Bid Bond" as the case may be.
- (b) Amount must be equal to at least that stated in the Notice to Bidders but not less than that required by State Statutes.

IV. GENERAL

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of ninety (90) calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the conditional acceptance of this bid, bidder will execute the formal Contract attached within 15 days and deliver the Surety Bond or Bonds and insurance as required by the Contract Documents. The bid security attached in the sum of \_\_\_\_\_

Dollars (\$ \_\_\_\_\_) is to become the property of the Owner in the event the Contract, Insurance and Bonds are not executed within the time above set forth.

V. STARTING AND COMPLETION

If awarded a Contract under this Proposal, the Undersigned proposes to start work at the site within thirty (30) calendar days after the receipt from the Owner of a written notice to proceed. The Undersigned further agrees to fully complete all work covered by this Proposal to the point of final acceptance by the Owner within **180** consecutive calendar days from and including the date of receipt from the Owner of a written notice to proceed.

NOTE: The Contractor's attention is directed to the provisions for Liquidated Damages as provided in the Supplementary Conditions and in the Agreement Section in addition to the Excess Cost of Engineering.

VI. SIGNATURE

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ )ss

\_\_\_\_\_, being first duly sworn on oath deposes and says that the bidder on the above proposal is organized as indicated below and that all statements herein made are made on behalf of such bidder and that this deponent is authorized to make them.

\_\_\_\_\_, also deposes and says that he has examined and carefully prepared his bid proposal from the Contract Drawings and Specifications and has checked the same in detail before submitting this Proposal or bid; that the statements contained herein are true and correct.

(a) Corporation

The bidder is a corporation organized and existing under the laws of the State of \_\_\_\_\_, which operates under the legal name of \_\_\_\_\_, and the full names of its officers are as follows:

President \_\_\_\_\_  
Secretary \_\_\_\_\_  
Treasurer \_\_\_\_\_  
Manager \_\_\_\_\_

and it (does) or (does not) have a corporate seal. The (name) \_\_\_\_\_  
\_\_\_\_\_ is authorized to sign construction proposals and  
contracts for the company by action of its Board of Directors taken on  
\_\_\_\_\_, a certified copy of which is hereto attached.  
(Strike out this last sentence if not applicable.)

(b) Partnership

The bidder is a partnership consisting of individual partners whose full names are as follows:

\_\_\_\_\_  
\_\_\_\_\_

The partnership does business under the legal name of:

\_\_\_\_\_.

(c) Individual

The bidder is an individual whose full name is \_\_\_\_\_  
\_\_\_\_\_, and if operating under a trade name, said trade  
name is \_\_\_\_\_.

Dated \_\_\_\_\_, 20\_\_\_\_.

(Seal - If Corporation)  
(Sign Here)

\_\_\_\_\_  
Legal Entity

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

\_\_\_\_\_  
Telephone No. \_\_\_\_\_

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

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

My Commission Expires: \_\_\_\_\_

CONTRACTOR'S BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we \_\_\_\_\_  
(hereinafter called the Principal) and \_\_\_\_\_  
\_\_\_\_\_, (hereinafter called the Surety), a corporation chartered and existing  
under the laws of the State of \_\_\_\_\_ with its principal offices in the City of  
\_\_\_\_\_ and authorized to do business in the State of \_\_\_\_\_ are  
held and firmly bound unto the City of Mt Juliet, Tennessee (hereinafter called the Owner), in the full and  
just sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_)

good and lawful money of the United States of America, to be paid upon demand of the Owner, to which  
payment well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors,  
administrators, and assigns, jointly and severally and firmly by these presents.

WHEREAS, the Principal is about to submit or has submitted to the Owner, a proposal for  
furnishing all labor, materials, equipment and incidentals necessary to furnish and install the Wynfield  
Pump Station Modifications project.

WHEREAS, the Principal desires to file this bond in accordance with law, in lieu of a certified  
bidder's check otherwise required to accompany this Proposal.

NOW, THEREFORE: The conditions of this obligation are such that if the Proposal be accepted,  
the Principal shall, within fifteen days after the date of receipt of a written notice of award of contract,  
execute a contract in accordance with the Proposal and upon the terms, conditions and price(s) set forth  
therein, of the form and manner required by the Owner, and execute a sufficient and satisfactory contract  
performance bond payable to the Owner, in an amount of One Hundred Percent (100%) of the total  
contract price in form and with security satisfactory to said Owner, then this obligation to be void;  
otherwise to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principal  
to comply with any or all of the foregoing requirements within the time specified above, immediately pay  
to the aforesaid Owner, upon demand, the amount hereof in good and lawful money of the United States  
of America.

IN TESTIMONY THEREOF, the Principal and Surety have caused these presents to be duly signed  
and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Principal

BY \_\_\_\_\_  
(Seal)

\_\_\_\_\_  
Surety

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

Countersigned \_\_\_\_\_

Local Resident Producing Agent for \_\_\_\_\_



Source: Tennessee Codes/TITLE 50 EMPLOYER AND EMPLOYEE /CHAPTER 9 DRUG-FREE WORKPLACE PROGRAMS /50-9-113. State and local government construction contracts.

**50-9-113. State and local government construction contracts.**

(a) Each employer with five (5) or more employees receiving pay who contracts with the state or any local government to provide construction services or who is awarded a contract to provide construction services or who provides construction services to the state or local government shall submit an affidavit stating that such employer has a drug-free workplace program that complies with this chapter, in effect at the time of such submission of a bid at least to the extent required of governmental entities. Any private employer that certifies compliance with the drug-free workplace program, only to the extent required by this section, shall not receive any reduction in workers' compensation premiums and shall not be entitled to any other benefit provided by compliance with the drug-free workplace program set forth in this chapter. Nothing in this section shall be construed to reduce or diminish the rights or privileges of any private employer who has a drug-free workplace program that fully complies with this chapter. For purposes of compliance with this section, any private employer shall obtain a certificate of compliance with the applicable portions of the Drug-free Workplace Act from the department of labor and workforce development. No local government or state governmental entity shall enter into any contract or award a contract for construction services with an employers who does not comply with the provisions of this section.

(b) For the purposes of this section, "employer" does not include any utility or unit of local government, "Employer" includes any private company or corporation.

(c) If it is determined that an employer subject to the provisions of this section has entered into a contract with a local government or state agency and such employer does not have a drug-free workplace pursuant to this section, such employer shall be prohibited from entering into another contract with any local government or state agency until such employer can prove compliance with the drug-free workplace program pursuant to this section. If the same employer again contracts with any local government or state agency and does not have a drug-free workplace program pursuant to this section, then such employer shall be prohibited from entering into another contract with any local government or state agency for not less than three (3) months from the date such violation was discovered and verified and shall be prohibited from entering into another contract until such employer complies with the drug-free workplace program pursuant to this section. If the same employer for a third time contracts with any local government or state agency and does not have a drug-free workplace program pursuant to this section, then such employer shall be prohibited from entering into another contract with any local government or state agency for not less than one (1) year from the date such violation was discovered and verified and shall be prohibited from entering into another contract until such employer complies with the drug-free workplace program pursuant to this section.

(d) A written affidavit by the principal officer of a covered employer provided to a local government at the time such bid or contract is submitted stating that the employer is in compliance with this section shall absolve the local government of all further responsibility under this section and any liability arising from the employer's compliance or failure of compliance with the provisions of this section.

[Acts 2000, ch. 918, §§ 1,2.]

Source: Tennessee Code/TITLE 50 EMPLOYER AND EMPLOYEE /CHAPTER 9 DRUG-FREE WORKPLACE PROGRAMS /50-9-114. Information to be included within bid or procurement specifications for construction services – Contesting a contract.

**50-9-114. Information to be included within bid or procurement specifications for construction services – Contesting a contract.**

(a) The state or any local government, including departments, divisions, or agencies thereof, shall include within any bid or procurement specifications for construction services the following information:

(1) A statement as to whether the government entity issuing a construction service bid or other procurement specification operates a drug-free workplace program as certified under this chapter or operates any other program that provide for testing of employees for workplace use of drugs or alcohol;

(2) If operating such a program, a statement that describes the government entity's drug-free workplace or alcohol and drug testing program; and

(3) A statement that all bidders or proposals for construction services are required to submit an affidavit as part of their bid, that attests that such bidder operates a drug-free workplace program or other drug or alcohol testing program with requirements at least as stringent as that of the program operated by the governmental entity.

(b) Unless suit is filed in chancery court, employers shall have seven (7) calendar days to contest a contract entered into by employers subject to the provisions of this section with a local government or state government. Employers that do not contest such contracts within seven (7) calendar days by filing suit in chancery court shall waive their rights to challenge such contracts for violating the provisions of this section. Such contracts shall be contested in chancery court in the county where the contract was entered. The trial of the alleged violation of the provisions of this section shall be expedited by giving it priority over all cases on the trial docket, except workers' compensation cases.

[Acts 2002, ch. 693, § 1.]



CHAPTER NO. 878

HOUSE BILL NO. 111

**By Representatives Moore, Hood, Davidson, Borchert, Sherry Jones, Langster, Tidwell, Hackworth, Cobb, Eldridge, Favors, Brown, Rowe, Mike Turner, Pruitt, McDonald, Eric Watson, Campfield, Hensley, McKee, Roach, DuBois**

**Substituted for: Senate Bill No. 411**

**By Senators Haynes, Ketron, Cohen**

AN ACT to amend Tennessee Code Annotated, Title 12, Chapter 4, relative to public contracts.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. Tennessee Code Annotated, Title 12, Chapter 4, Part 1, is amended by inserting the following as a new, appropriately designated section:

(a)

(1) The state or other state entities shall not contract to acquire goods or services from any person who knowingly utilizes the services of illegal immigrants in the performance of a contract for goods or services entered into with the state or a state entity.

(2) No person may contract to supply goods or services to the state or other state entities if that person knowingly utilizes the services of illegal immigrants in the performance of a contract to supply goods or services entered into with the state or a state entity.

(3) After the effective date of this act, no person may enter into a contract to supply goods or services to the state or other state entities without first attesting in writing that the person will not knowingly utilize the services of illegal immigrants in the performance of the contract and will not knowingly utilize the services of any subcontractor who will utilize the services of illegal immigrants in the performance of the contract.

(b) If any person who contracts to supply goods or services to the state or other state entities, or who submits a bid to contract to supply goods or services to the state or other state entities, is discovered to have knowingly utilized the services of illegal immigrants in the performance of such a contract to supply goods or services to the state or other state entities, the commissioner of finance and administration shall declare that person to be prohibited from contracting for or submitting a bid for any contract to supply goods or services to the state or other state entities for a period of one (1) year from the date of discovery of the usage of illegal immigrant services in the performance of a contract to supply goods or services to the state or other state entities.

(c) Any person who is prevented from contracting for or submitting a bid for a contract to supply goods or services to the state or other state entities for one (1) year pursuant to subsection (b) may appeal the imposition of the one (1) year prohibition by utilizing an appeals process to be established by the commissioner of finance and administration.

**Chapter No. 878] PUBLIC ACTS, 2006**

SECTION 2. The commissioner of finance and administration is authorized to promulgate rules and regulations to effectuate the purposes of this act. All such rules and regulations shall be promulgated in accordance with the provisions of Tennessee Code Annotated, Title 4, Chapter 5.

SECTION 3. For the purpose of promulgating rules, this act shall take effect upon becoming a law, the public welfare requiring it. For all other purposes, this act shall take effect January 1, 2007, the public welfare requiring it.

**PASSED: May 25, 2006**

**APPROVED this 15<sup>th</sup> day of June 2006**

  
JIMMY RAIFE, SPEAKER  
HOUSE OF REPRESENTATIVES

  
JOHN S. WILDER  
SPEAKER OF THE SENATE

  
PHIL BREDESEN, GOVERNOR



**SENATE BILL 1188**  
**By Niceley**

**HOUSE BILL 1052**  
**By Jernigan**

AN ACT to amend Tennessee Code Annotated, Title 4; Title 8 and Title 12, relative to public contracts.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. Tennessee Code Annotated, Title 12, Chapter 4, Part 1, is amended by adding the following language as a new section: 12-4-127.

(a) On and after the effective date of this act, in the case of any contract for services to be let by a department or agency of state government organized in title 4, chapter 3, to an outside entity, the commissioner or director of such department or agency shall certify to the comptroller of the treasury that:

(1) No state employee within that department or agency is capable of accomplishing the tasks sought to be contracted;

(2) No vacant positions in such department or agency exist that can be filled by hiring an employee to perform the services in lieu of contacting for such services to an outside entity;

(3) A cost-benefit analysis has been conducted regarding the contract and the benefit has been determined to exceed the cost;

(4) The proposed contractor does not have a record of misconduct in the performance of any past or present contract with the state of Tennessee or any other contracting agency. For the purpose of this section, evidence of misconduct shall include any finding by any criminal or civil court of competent jurisdiction in the United States, or by any agency of federal government or the state government of Tennessee, that the contractor has conducted business dishonestly or has acted in violation of state or federal law, or has violated the legally protected rights of its employees or of any other persons; and

(5) The contracting department or agency or another state department or agency competent to do so will oversee the performance of the contract. No third party outside of state government will conduct such oversight.

(b) The commissioner or director shall attach to the certification required under subsection (a) persuasive written reasons as to the inability of the department or agency's employees to perform the services required under the contract. The commissioner or director shall also attach a copy of the cost-benefit analysis to the certification.

SECTION 2. This act shall take effect July 1, 2013, the public welfare requiring it.





Central  
Procurement Office

July 15, 2016

### NOTICE

Tenn. Code Ann. § 12-12-106 requires the chief procurement officer to publish, using credible information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105.

For these purposes, the State intends to use the attached list of “Entities Ineligible to Contract with the State of South Carolina or any Political Subdivision of the State per the Iran Divestment Act of 2014, S.C. Code Ann. §§ 11-57-10, et. seq.”

While inclusion on this list would make a person ineligible to contract with the state of Tennessee, if a person ceases its engagement in investment activities in Iran, it may be removed from the list.

If you feel as though you have been erroneously included on this list please contact the Central Procurement Office at [CPO.Website@tn.gov](mailto:CPO.Website@tn.gov).



LIST OF SUBCONTRACTORS

PROJECT: WYNFIELD PUMP STATION MODIFICATIONS

The undersigned states that the following is a full and complete list of the proposed subcontractors on this Project and the class of work to be performed by each, and that such list will not be added to nor altered without written consent of the Owner.

<u>Subcontractor and Address</u>	<u>Class of Work to be Performed</u>
(1) _____ _____	_____ _____
(2) _____ _____	_____ _____
(3) _____ _____	_____ _____
(4) _____ _____	_____ _____
(5) _____ _____	_____ _____
(6) _____ _____	_____ _____
(7) _____ _____	_____ _____

Dated \_\_\_\_\_

\_\_\_\_\_  
Bidder

By \_\_\_\_\_

STATEMENT OF EXPERIENCE OF BIDDER

The bidder is requested to state below that work of similar magnitude in order to judge his experience, skill and business standing and his ability to conduct the work as completely and as rapidly as required under the terms of the Contract.

<u>Project and Location</u>	<u>Reference</u>
(1) _____ _____	_____ _____
(2) _____ _____	_____ _____
(3) _____ _____	_____ _____
(4) _____ _____	_____ _____
(5) _____ _____	_____ _____
(6) _____ _____	_____ _____
(7) _____ _____	_____ _____
Dated _____	Bidder _____ By _____

AGREEMENT SECTION

CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS

WYNFIELD PUMP STATION MODIFICATIONS

SUPPLEMENTARY CONDITIONS

TABLE OF CONTENTS

<u>TITLE</u>	<u>PAGE</u>
1 Construction Operations and Material Storage	1
2 Contract Drawings	1
3 Arrangement and Charge for Water and Electrical Power	1
4 Sequence of Operations	1
5 Time for Completion and Liquidated Damages	2
6 Maintenance and Access of Traffic	3
7 Property Damage Claims	3
8 Wastewater Bypassing	3
9 Work In City and State Road Right-of-Way	3
10 Repair of Existing Water Mains and Services	4
11 Copies of Documents	4
12 Subsurface Investigation	4
13 Hazardous Environmental Conditions	4
14 Liability Insurance	4
15 Property Insurance	5

## SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. C-700, 2013 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

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.

1. CONSTRUCTION OPERATIONS AND MATERIAL STORAGE

The Contractor must carry on all his construction operations, including storage of materials, in such a way as to interfere as little as possible with the operation and maintenance of existing sewer facilities.

2. CONTRACT DRAWINGS

The Drawings applicable to the work to be performed under this Contract are referred to in this document as Contract Drawings and described as follows:

CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS

WYNFIELD PUMP STATION MODIFICATIONS

3. ARRANGEMENT AND CHARGE FOR WATER AND ELECTRICAL POWER

Where the Contractor desires a water and electrical power supply in connection with any construction work, he shall make complete and satisfactory arrangements with the City of Mt Juliet, Tennessee.

Payments shall be made by the Contractor in accordance with the Utility Agency's official rates and policies.

4. SEQUENCE OF OPERATIONS

The work designated to be performed under this Contract shall be coordinated in such manner that there shall be a minimum of interference with traffic and existing utilities. Existing water, gas, electric and communications shall not be interrupted without prior arrangements having been made with the management of the utility involved.

Backfilling and clean-up work shall be continuously prosecuted to the point that satisfactory ingress and egress to roadways can be maintained.

During the period required for construction under this Contract, it will be necessary that any existing treatment facilities, sanitary sewers, force mains, and pumping stations, be maintained in operation. The Contractor shall prepare and submit to the Owner and the Engineer a schedule of operations for approval. The Contractor shall dispose of all storm water and sewage accumulated in a manner acceptable to the Engineer.

5. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

The successful bidder shall commence work upon issuance by the Owner of a Written Notice to Proceed and shall complete all work in accordance with the terms and conditions of the Contract Documents within 180 consecutive calendar days. The notice to proceed will be issued in accordance with Paragraph 2.03 of the General Conditions.

It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the Contract of the work to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the "Notice to Proceed."

The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality. If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount specified in the Agreement, not a penalty but as liquidated damages for breach of Contract, as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the work.

The said amount, is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain, and said amount shall be retained from time to time by the Owner from current periodical estimates.

Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

- a. To any preference, priority or allocation order duly issued by the government;
- b. To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight, embargoes, and unusually severe weather; and
- c. To any delays of subcontractors or suppliers occasioned by any of the causes specific in subsections a and b of this article.

Provided, further that the Contractor shall within ten (10) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the Contract, notify the Owner in writing of the causes of the delay and notify the Contractor within a reasonable time of its decision in the matter.

6. MAINTENANCE AND ACCESS OF TRAFFIC

Portions of the work may be located in developed areas requiring the access for fire and other departments to be provided for, and at least one free lane shall be available for all traffic. Contractors are to arrange operations in these areas to meet these requirements and secure approval of operating procedures Tennessee DOT.

7. PROPERTY DAMAGE CLAIMS

Any and all property damage claims received by the Owner, their agents, or the Contractor resulting from any alleged operation of the Contractor shall be investigated promptly (within 14 days) by the Contractor or insurance carrier. Any such claims made to the Owner shall be forwarded to the Contractor in writing and the Contractor shall subsequently forward such claims to his insurance carrier.

Before final payment is made by the Owner to the Contractor, a summary of the Contractor's disposition of all such claims shall be provided to the Owner. Nothing contained in this paragraph shall be interpreted by the Contractor to lessen the requirements of the General Conditions.

8. WASTEWATER BYPASSING

The Contractor shall insure that no wastewater bypassing will occur due to construction activities unless a schedule is approved by the State of Tennessee and the U.S. Environmental Protection Agency.

9. WORK IN CITY AND STATE ROAD RIGHTS-OF-WAY

When ordered by the Engineer or Owner's Representative, the Contractor shall place temporary cold mix in street trench cuts. This temporary pavement shall be properly maintained by the Contractor until such time as final pavement restoration is completed.

At various locations on this project (in addition to what might be specifically shown on the Contract Drawings), the nature of construction and traffic conditions will require that the Contractor utilize and maintain heavy steel plates to facilitate traffic. These steel plates shall be of sufficient size and thickness to be utilized for varying trenching conditions.

The Contractor shall make every possible effort to backfill all excavations at the end of each day's construction operations. To accomplish this procedure, the Contractor shall mark and/or reference the end of the pipe each day for reopening trench the next morning. In some cases the use of "sand or gravel bags" will facilitate this procedure, especially where major roads or highways must be crossed one lane at a time.

The Contractor shall remove equipment and other materials from and near the street or highway at the end of each day's construction operations. See previous provisions concerning barricades and warning signs.

All costs associated with furnishing, placing, maintaining and using these steel plates shall be merged into the Contractor's unit price bid for sewer mains.

10. REPAIR OF EXISTING WATER MAINS AND SERVICES

Should the Contractor through his construction operations break or otherwise damage an existing water service or water main, the Contractor may undertake to make the necessary repairs as long as the following conditions are met:

- A. Notify the local Utilities Board of the damage and coordinate with the Board on the operation of any valves.
- B. Complete the repair in compliance with requirements of the local Utilities Board.
- C. Furnish and install materials, fittings and sleeves in compliance with the standards of the local Utilities Board.
- D. Store and have available on the project proper materials of sizes and type needed to avoid unnecessary repair delays.

Any repairs which are completed by the forces of the local Utilities Board shall be billed to the Contractor based on the Board's Standard invoicing procedures.

11. COPIES OF DOCUMENTS

**Delete Paragraph 2.02.A of the Standard General Conditions in its entirety and insert the following in its place:**

Owner shall furnish to Contractor up to 5 printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

12. SUBSURFACE INVESTIGATION

**Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:**

- A. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

13. HAZARDOUS ENVIRONMENTAL CONDITIONS

**Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:**

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

14. LIABILITY INSURANCE

**Add the following new paragraph immediately after Paragraph 6.03.J of the Standard General Conditions:**

- K. The limits of liability for the insurance required by Paragraphs 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. This insurance shall:
  - a. include the interests of Owner, Contractor, Subcontractors, Engineer and any other individuals or entities identified herein, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
  - b. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;
  - c. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
  - d. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
  - e. allow for partial utilization of the Work by Owner;
  - f. include testing and startup; and
  - i. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.
2. Contractor shall be responsible for any deductible or self-insured retention.
3. The policies of insurance required to be purchased and maintained by Contractor in accordance with this Supplementary Conditions Page 8 Item 27- Liability Insurance and shall comply with the requirements of paragraph 6.05 of the General Conditions.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



Copyright © 2013:

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

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

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

The copyright for this document is owned jointly by the three sponsoring organizations listed above. The National Society of Professional Engineers is the Copyright Administrator for the EJCDC documents; please direct all inquiries regarding EJCDC copyrights to NSPE.

NOTE: EJCDC publications may be purchased at [www.ejcdc.org](http://www.ejcdc.org), or from any of the sponsoring organizations above.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

## TABLE OF CONTENTS

	Page
Article 1 – Definitions and Terminology .....	1
1.01 Defined Terms .....	1
1.02 Terminology.....	5
Article 2 – Preliminary Matters.....	6
2.01 Delivery of Bonds and Evidence of Insurance .....	6
2.02 Copies of Documents.....	6
2.03 Before Starting Construction.....	6
2.04 Preconstruction Conference; Designation of Authorized Representatives .....	7
2.05 Initial Acceptance of Schedules.....	7
2.06 Electronic Transmittals.....	7
Article 3 – Documents: Intent, Requirements, Reuse .....	8
3.01 Intent .....	8
3.02 Reference Standards .....	8
3.03 Reporting and Resolving Discrepancies.....	8
3.04 Requirements of the Contract Documents .....	9
3.05 Reuse of Documents.....	10
Article 4 – Commencement and Progress of the Work .....	10
4.01 Commencement of Contract Times; Notice to Proceed .....	10
4.02 Starting the Work .....	10
4.03 Reference Points.....	10
4.04 Progress Schedule .....	10
4.05 Delays in Contractor’s Progress.....	11
Article 5 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions .....	12
5.01 Availability of Lands.....	12
5.02 Use of Site and Other Areas .....	12
5.03 Subsurface and Physical Conditions .....	13
5.04 Differing Subsurface or Physical Conditions.....	14
5.05 Underground Facilities .....	15

5.06	Hazardous Environmental Conditions at Site .....	17
<b>Article 6 – Bonds and Insurance .....</b>		<b>19</b>
6.01	Performance, Payment, and Other Bonds .....	19
6.02	Insurance—General Provisions .....	19
6.03	Contractor’s Insurance .....	20
6.04	Owner’s Liability Insurance .....	23
6.05	Property Insurance .....	23
6.06	Waiver of Rights .....	25
6.07	Receipt and Application of Property Insurance Proceeds.....	25
<b>Article 7 – Contractor’s Responsibilities .....</b>		<b>26</b>
7.01	Supervision and Superintendence.....	26
7.02	Labor; Working Hours.....	26
7.03	Services, Materials, and Equipment .....	26
7.04	“Or Equals” .....	27
7.05	Substitutes.....	28
7.06	Concerning Subcontractors, Suppliers, and Others .....	29
7.07	Patent Fees and Royalties .....	31
7.08	Permits.....	31
7.09	Taxes.....	32
7.10	Laws and Regulations .....	32
7.11	Record Documents .....	32
7.12	Safety and Protection .....	32
7.13	Safety Representative .....	33
7.14	Hazard Communication Programs.....	33
7.15	Emergencies .....	34
7.16	Shop Drawings, Samples, and Other Submittals .....	34
7.17	Contractor’s General Warranty and Guarantee .....	36
7.18	Indemnification .....	37
7.19	Delegation of Professional Design Services.....	37
<b>Article 8 – Other Work at the Site .....</b>		<b>38</b>
8.01	Other Work.....	38
8.02	Coordination.....	39
8.03	Legal Relationships .....	39

Article 9 – Owner’s Responsibilities.....	40
9.01 Communications to Contractor.....	40
9.02 Replacement of Engineer.....	40
9.03 Furnish Data.....	40
9.04 Pay When Due.....	40
9.05 Lands and Easements; Reports, Tests, and Drawings.....	40
9.06 Insurance.....	40
9.07 Change Orders.....	40
9.08 Inspections, Tests, and Approvals.....	41
9.09 Limitations on Owner’s Responsibilities.....	41
9.10 Undisclosed Hazardous Environmental Condition.....	41
9.11 Evidence of Financial Arrangements.....	41
9.12 Safety Programs.....	41
Article 10 – Engineer’s Status During Construction.....	41
10.01 Owner’s Representative.....	41
10.02 Visits to Site.....	41
10.03 Project Representative.....	42
10.04 Rejecting Defective Work.....	42
10.05 Shop Drawings, Change Orders and Payments.....	42
10.06 Determinations for Unit Price Work.....	42
10.07 Decisions on Requirements of Contract Documents and Acceptability of Work.....	42
10.08 Limitations on Engineer’s Authority and Responsibilities.....	42
10.09 Compliance with Safety Program.....	43
Article 11 – Amending the Contract Documents; Changes in the Work.....	43
11.01 Amending and Supplementing Contract Documents.....	43
11.02 Owner-Authorized Changes in the Work.....	44
11.03 Unauthorized Changes in the Work.....	44
11.04 Change of Contract Price.....	44
11.05 Change of Contract Times.....	45
11.06 Change Proposals.....	45
11.07 Execution of Change Orders.....	46
11.08 Notification to Surety.....	47
Article 12 – Claims.....	47

12.01	Claims .....	47
Article 13 –	Cost of the Work; Allowances; Unit Price Work.....	48
13.01	Cost of the Work.....	48
13.02	Allowances.....	50
13.03	Unit Price Work .....	51
Article 14 –	Tests and Inspections; Correction, Removal or Acceptance of Defective Work.....	52
14.01	Access to Work .....	52
14.02	Tests, Inspections, and Approvals .....	52
14.03	Defective Work .....	53
14.04	Acceptance of Defective Work .....	53
14.05	Uncovering Work.....	53
14.06	Owner May Stop the Work.....	54
14.07	Owner May Correct Defective Work .....	54
Article 15 –	Payments to Contractor; Set-Offs; Completion; Correction Period.....	55
15.01	Progress Payments .....	55
15.02	Contractor’s Warranty of Title .....	58
15.03	Substantial Completion .....	58
15.04	Partial Use or Occupancy.....	59
15.05	Final Inspection.....	59
15.06	Final Payment .....	59
15.07	Waiver of Claims.....	61
15.08	Correction Period .....	61
Article 16 –	Suspension of Work and Termination .....	62
16.01	Owner May Suspend Work.....	62
16.02	Owner May Terminate for Cause .....	62
16.03	Owner May Terminate For Convenience .....	63
16.04	Contractor May Stop Work or Terminate .....	63
Article 17 –	Final Resolution of Disputes .....	64
17.01	Methods and Procedures .....	64
Article 18 –	Miscellaneous .....	64
18.01	Giving Notice .....	64
18.02	Computation of Times .....	64
18.03	Cumulative Remedies.....	64

18.04	Limitation of Damages.....	65
18.05	No Waiver .....	65
18.06	Survival of Obligations.....	65
18.07	Controlling Law.....	65
18.08	Headings .....	65

## 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 form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  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, or both; 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, or both; 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; or (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. 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), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the 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. *Engineer*—The individual or entity named as such in the Agreement.
21. *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.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *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.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *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.
28. *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.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *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.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *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.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *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.
36. *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.

37. *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 furnished by Owner which are designated for the use of Contractor.
38. *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.
39. *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.
40. *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 thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *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.

48. *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 the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
  1. 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:*
  1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
  1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
    - a. does not conform to the Contract Documents; or
    - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
    - c. 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 15.04).
- E. *Furnish, Install, Perform, Provide:*
  1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. 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. 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 Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), 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 executed 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 specifically 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 *Initial 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 for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall 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.

#### 2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

### ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

#### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall 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.

#### 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, shall mean 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, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, 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, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents 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 Documents 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 Documents 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 shall 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 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 thereunder.
- 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 give written notice to Owner and Contractor 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 editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of 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 shall preclude 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 thirtieth 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 sixtieth day after the day of Bid opening or the thirtieth 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 shall 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 shall 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 shall 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 the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. 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. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall 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 utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  4. acts of war or terrorism.
- D. 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.
- E. Paragraph 8.03 governs 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.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times 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.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

## **ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

### **5.01 *Availability of Lands***

- A. Owner shall furnish the Site. Owner shall notify Contractor 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; 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 7.12, 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 at law; 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 shall 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 known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
  - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); 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 upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or
  - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
  - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

#### 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 either:
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; or
  2. is of such a nature as to require a change in the Drawings or Specifications; or
  3. differs materially from that shown or indicated in the Contract Documents; or
  4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, 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 the necessity of Owner's obtaining 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 above; 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. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or 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 conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
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; or
    - 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 as 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, or both, then any such adjustment shall 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, or both, 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.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
  1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
  2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
    - d. 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 in the Contract Documents, or was not shown or indicated 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), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; 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 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. *Possible Price and Times Adjustments:*
  - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, 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. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
    - 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;
    - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
    - d. 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, or both, then any such adjustment shall 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, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

## 5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
  2. 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 Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or
  2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for 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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 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.
- 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 or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not 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 shall obligate 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 shall obligate 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 all of Contractor's obligations under the Contract. These bonds shall 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 Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, 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 shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. 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.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

### 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. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. 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, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of 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.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect 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 shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

### 6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  2. claims for damages insured by reasonably available personal injury liability coverage.
  3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
    - a. Such insurance shall be maintained for three years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
  2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Broad form property damage coverage.
  4. Severability of interest.
  5. Underground, explosion, and collapse coverage.
  6. Personal injury coverage.
  7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
  8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds:* The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance:* If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions:* The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
  2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
  3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
  4. remain in effect at least until final payment (and longer if expressly required in this Article) 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 Documents.
  5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed 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.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

#### 6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. 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.

#### 6.05 *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 full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
  - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
  - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
  - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
  6. extend to cover damage or loss to insured property while in transit.
  7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
  8. allow for the waiver of the insurer's subrogation rights, as set forth below.
  9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
  10. not include a co-insurance clause.
  11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
  12. include performance/hot testing and start-up.
  13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed 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.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- 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 notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* 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 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

## 6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers 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. 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 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 Subcontractors, all individuals or entities identified in the Supplementary Conditions as 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. None of the above waivers shall extend 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. 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:
  - 1. loss 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 perils whether or not insured by Owner; and
  - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner 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.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work 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 any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

## 6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 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 6.05 shall 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, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

## **ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES**

### **7.01 *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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

### **7.02 *Labor; Working Hours***

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed 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.

### **7.03 *Services, Materials, and Equipment***

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required by the Specifications shall 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 shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

#### 7.04 "Or Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the 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 material or equipment, or items from other proposed suppliers under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
      - 3) it has a proven record of performance and availability of responsive service; and
      - 4) it is not objectionable to Owner.
    - b. Contractor certifies that, if approved and incorporated into the Work:
      - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
      - 2) it 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 shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the proposed item as a substitute pursuant to Paragraph 7.05.

#### 7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment 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 material or equipment under the circumstances described below. To the extent possible such requests shall 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 material or equipment from anyone other than Contractor.
  - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.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 material or equipment that Contractor seeks to furnish or use. The application:
    - a. shall 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 that specified, and
      - 3) be suited to the same use as that 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 that specified, and

- 2) available engineering, sales, maintenance, repair, and replacement services.
  - d. shall 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 shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

#### 7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract 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, Supplier, or other individual or entity 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 five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. 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, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, 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, Supplier, or other individual or entity, whether initially or as a replacement, shall 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 fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
2. shall create 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.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in 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 shall be disclosed by Owner 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.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all 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

#### 7.09 *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.

#### 7.10 *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. Except where otherwise expressly required by applicable Laws and Regulations, 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 shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under 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 notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

#### 7.11 *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.

#### 7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
  - 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.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
  - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
  - D. 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.
  - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.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).
  - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
  - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

#### 7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of 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 threatened 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 thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 7.16 *Shop Drawings, Samples, and Other Submittals*

##### A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
  - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
  - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall 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 submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

##### 1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will 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.D.

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.D.
  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. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. 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, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
  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 shall 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.
  5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 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, shall 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, Sample, or other submittal shall 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.D.4.

E. *Resubmittal Procedures:*

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 submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  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. any inspection, test, or approval by others; or
  8. any correction of defective Work by Owner.

- D. 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 shall 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 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury 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 shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
  - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

#### 7.19 *Delegation of Professional Design Services*

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

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

## **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 utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

## 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 at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible 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, or both. 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 shall 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. When applicable, any such equitable adjustment in Contract Price shall 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 is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- 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. 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 to 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.
- C. 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 to Contractor.

- D. 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 shall 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 Documents (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 10.08. 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 *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 Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *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.

10.07 *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.

10.08 *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, shall 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 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 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *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 (if any) of which Engineer has been informed.

**ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK**

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
  - 1. *Change Orders:*
    - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
    - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not 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, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
  - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: 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. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

#### 11.02 *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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, 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 shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.03 *Unauthorized Changes in the Work*

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

#### 11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall 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); or
  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 11.04.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 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall 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 shall be 15 percent;
    - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five 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 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.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 five 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 shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
    - d. no fee shall 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 will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
    - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
  2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, 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.
  3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *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 that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

#### 11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the 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 11.02, (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 in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

**ARTICLE 12 – CLAIMS**

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted 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; and
  - 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.
- 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 shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall be incorporated in a Change Order 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. 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 shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
  1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
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, who 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 shall 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 for services specifically related to the Work.
5. Supplemental costs including 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, and hand tools not owned by the workers, 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.
  - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner 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.
  - 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 property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- 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 shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications 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. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. 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.
- 5. 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:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

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

### 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 on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a 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 on account of Work covered by allowances, and the Contract Price shall 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, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
  - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
  - 2. there is no corresponding adjustment with respect to any other item of Work; and
  - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

## 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 will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

### 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 shall 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 shall 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 shall 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 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 shall 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, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 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 shall 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 rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven 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 on account of 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. 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 shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and 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.
  2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
  3. 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, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, 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 on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
  - 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 that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
  - j. liquidated 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;
  - l. there are other items entitling 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 shall 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 shall be treated as an amount due as determined by Paragraph 15.01.C.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 seven 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 shall 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 seven 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 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 6.05 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 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall 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 disputes that Contractor believes are unsettled; 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 Application and Acceptance:***

1. 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 ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall 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. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. 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. *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.

**D. *Payment Becomes Due:*** Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

#### 15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted 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 terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such other adjacent areas;
  - 2. correct such defective Work;
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, 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 therefrom.
- B. If 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 claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. 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.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not 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, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall 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) ten 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) 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 seven 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 shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *Owner May Terminate For Convenience*

- A. Upon seven 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 on account of loss of anticipated overhead, profits, or revenue, 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 seven 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, seven 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; and
  2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising 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; or
  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 Documents requires the giving of written notice, it will be deemed to have been validly given if:
1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
  2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

### **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 shall not constitute a waiver of that provision, nor shall 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 or completion of the Contract or termination 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 *Headings*

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

CITY OF MT. JULIET, TENNESSEE  
DEPARTMENT OF PUBLIC WORKS

WYNFIELD PUMP STATION MODIFICATIONS

THIS AGREEMENT made this \_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_, by and between the City of Mt. Juliet, Tennessee, hereinafter called the "Owner," and \_\_\_\_\_, hereinafter called the "Contractor."

WITNESSETH:

WHEREAS, Owner has heretofore solicited bids for all the work and improvements and for the doing of all things included within the hereinafter specified improvements; and

WHEREAS, Owner did on the \_\_\_ day of \_\_\_\_\_, 20\_\_ find that Contractor was the lowest responsible bidder for the hereinafter specified construction work and did award Contractor a contract for said construction work;

NOW, THEREFORE, for and in consideration of their mutual promises, covenants, undertakings and agreements, the parties hereto do hereby agree as follows:

ARTICLE I - WORK TO BE DONE BY CONTRACTOR

Contractor agrees, at his own cost and expense, to do all the work and furnish all the labor, materials, equipment and other property necessary to do, construct, install, and complete all the work and improvements required for the City of Mt. Juliet, Tennessee Wynfield Pump Station Modifications Project, all in full accordance with and in compliance with and as required by the hereinafter specified Contract Documents, including any and all Addenda for said work, and to do, at his own cost and expense, all other things required of the Contractor by said Contract Documents of said work.

ARTICLE II - CONTRACT DOCUMENTS

The Contract Documents herein named include all of the following component parts, all of which are as fully a part of this contract as if herein set out verbatim or, if not attached, as if hereto attached:

1. Invitation to Bid
2. Instructions to Bidders
3. Proposal
4. Supplementary Conditions of Contract
5. General Conditions of Contract
6. Agreement
7. Contract Specifications
8. Contract Drawings
9. All Bonds, Insurance Certificates and Insurance Policies mentioned or referred to in the foregoing documents
10. Any and all other documents or papers included or referred to in the foregoing documents
11. Any and all Addenda to the foregoing

ARTICLE III - CONTRACT AMOUNT

The Contractor agrees to receive and accept the unit prices stated in the Contractor's Proposal included in the Contract Documents and made a part of this Agreement as full compensation for furnishing all materials and equipment and for doing all the work contemplated and embraced in this Contract; also for all loss or damage arising out of the nature of the work aforesaid or from the action of the elements or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by the Owner, and for all risks of every description connected with the work; also for well and faithfully completing the work, and the whole thereof, in the manner and according to and in compliance with the Contract Documents and the requirements of the Engineer under them; also for any and all other things required by the Contract Documents.

The quantities and totals on unit price items and the Total Contract Amount are approximate only, being inserted for the purpose of establishing the face amount of bonds to be provided by the Contractor. Payment of work covered by the unit price items will be made only on the basis of actual quantities of work complete in place as authorized and as measured as provided in the Contract Documents.

A. LUMP SUM BID

- 1 The base bid for the furnishing of all labor, materials and equipment \$ \_\_\_\_\_ for the Construction Work at the Wynfield Pump Station required for a complete operating installation as described in the Contract Documents for the lump sum of

TOTAL BID \$ \_\_\_\_\_

ARTICLE IV - CONFLICT BETWEEN COMPONENT PARTS OF CONTRACT

In the event that any provision in any of the following component parts of this Contract conflicts with any provision in any other of the following component parts, the provision in the component part first enumerated below will govern over any other component part which follows it numerically, except as may be otherwise specifically stated. Said component parts are the following:

- 1. Addendum Nos. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
- 2. Supplementary Conditions
- 3. General Conditions
- 4. Contract Specifications
- 5. Contract Drawings
- 6. Instructions to Bidders
- 7. Invitation to Bid
- 8. Contractor's Proposals
- 9. This Instrument

This Contract is intended to conform in all respects to applicable statutes of the state in which the work is to be constructed and, if any part or provision of this Contract conflicts therewith, the said statute shall govern.

## ARTICLE V - STARTING AND COMPLETION

The Contractor shall, and agrees to, commence work at the site within 15 calendar days after the issuance by the Owner of a written notice to proceed, and to fully complete all work to the point of final acceptance by the Owner, and to complete doing all other things required of him by the Contract Documents on or before and not later than 180 calendar days therefrom. Contractor shall, and agrees to, furnish and deliver to Owner within fifteen (15) days after date of award of this Contract, the Performance Bond, Payment Bond, and the insurance certificates and policies of insurance required of him by the provisions of the Conditions of the Contract, and to do, prior to starting work, all other things which are required of him by the Contract Documents as a prerequisite of starting work.

NOTE: The Contractor's attention is directed to the provisions from liquidated damages as provided in the Special Conditions, in addition to the Excess Cost of Engineering.

The contractor hereby agrees to commence work on this Project on or before a date to be specified in a written "Notice To Proceed" issued by the Owner and to fully complete the project within **180** consecutive calendars as stipulated in the Supplementary Conditions. The Contractor further agrees to pay as liquidated damages the sum of \$300 per day for each consecutive calendar day thereafter as provided in the Supplementary Conditions.

## ARTICLE VI - PAYMENTS TO CONTRACTOR

The Owner agrees with said Contractor to employ, and does hereby employ, the said Contractor to provide the materials and do all the work and do all other things hereinabove mentioned according to the terms and conditions hereinabove contained or referred to for the prices aforesaid, and hereby contracts to pay the same at the time, in the manner and upon the conditions set forth or referred to in the Contract Documents; and the said parties for themselves, their heirs, executors, administrators, successors and assigns, do hereby agree to the full performance of the covenants herein contained.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed in four original counterparts the day and year first above written.

(SEAL)

\_\_\_\_\_  
Contractor

ATTEST:

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

CITY OF MT. JULIET, TENNESSEE

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

By: \_\_\_\_\_  
City Manager

By: \_\_\_\_\_  
Director of Public Works

Approved as to Form and Legality

By \_\_\_\_\_  
Attorney for the Owner

IMPORTANT

NOTE: If the Contractor is a corporation, the legal name of the corporation shall be set forth above together with a signature of the officer or officers authorized to sign Contracts on behalf of the corporation; if Contractor is a partnership, the true name of the firm shall be set forth above together with the signatures of all the partners; and if Contractor is an individual, his signature shall be placed above. If signature is by an agent other than an officer of a corporation or a member of a partnership, a power-of-attorney must be attached hereto. Signature of Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

## PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

CITY OF MT. JULIET  
PO BOX 256  
MT. JULIET, TN 37122

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):* MT. JULIET, TN – WYNFIELD PUMP STATION MODIFICATIONS

### BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount: \$

Modifications to this Bond Form:  None  See Paragraph 16

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

\_\_\_\_\_  
*(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

**Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.**

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 shall 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 shall 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 shall 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 shall 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 shall 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 shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall 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 shall not be reduced or set off on account of any such unrelated obligations. No right of action shall 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 may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall 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 shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall 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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

## PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CITY OF MT. JULIET  
PO BOX 256  
MT. JULIET, TN 37122

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: MT. JULIET, TN – WYNFIELD PUMP STATION MODIFICATIONS

### BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount: \$

Modifications to this Bond Form:  None  See Paragraph 18

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

**Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.**

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 shall 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 shall 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 shall 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 shall 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 shall 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 shall 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 satisfy 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 shall 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 shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall 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 shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall 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:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
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;
4. A brief description of the labor, materials, or equipment furnished;
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;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and

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 shall be 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 shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:



# CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY)

PRODUCER

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 LETTER A

COMPANY LETTER B

COMPANY LETTER C

COMPANY LETTER D

COMPANY LETTER E

INSURED

### COVERAGES

THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENTS, 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.

CO LTR	TYPE OF INSURANCE	POLICY NO.	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS	
					GENERAL AGGREGATE	\$
	<b>GENERAL LIABILITY</b> <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCURRENCE <input type="checkbox"/> OWNERS & CONTRACTORS PROTECTIVE				GENERAL AGGREGATE	\$
					PRODUCTS-COMP/OPS AGGREGATE	\$
					PERSONAL & ADVERTISING INJURY	\$
					EACH OCCURRENCE	\$
					FIRE: DAMAGE (ANY ONE FIRE)	\$
					MEDICAL EXPENSE (ANY ONE PERSON)	\$
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON - OWNED AUTOS <input type="checkbox"/> GARAGE LIABILITY				CSL	\$
					BODILY INJURY PER PERSON	\$
					PROPERTY DAMAGE	\$
	<b>EXCESS LIABILITY</b> <input type="checkbox"/> UMBRELLA FORM <input type="checkbox"/> OTHER THAN UMBRELLA FORM				EACH OCCURRENCE	\$
					AGGREGATE	\$
	<b>WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY</b>				STATUTORY	\$
					EACH ACCIDENT	\$
					DISEASE-POLICY LIMIT	\$
					DISEASE-EACH EMPLOYEE	\$
	OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / RESTRICTIONS / SPECIAL ITEMS

CERTIFICATE HOLDER

### CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICES BE CANCELED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY SHALL MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT.

AUTHORIZED REPRESENTATIVE

CONTRACT SPECIFICATIONS  
FOR  
WYNFIELD PUMP STATION MODIFICATIONS

TABLE OF CONTENTS  
FOR  
DIVISION 1  
GENERAL REQUIREMENTS

<u>SECTION</u>		<u>PAGE</u>
1A	SUMMARY OF WORK	1-2
1B	CUTTING AND PATCHING	1-2
1C	SUBMITTALS	1-3
1D	TESTING	1-3
1E	MATERIALS AND EQUIPMENT	1-2
1F	CLEANING	1

## GENERAL REQUIREMENTS

### SECTION 1A

#### SUMMARY OF WORK

##### 1. WORK COVERED BY CONTRACT DOCUMENTS

The Work to be performed is as described in the Invitation to Bid.

##### 2. CONTRACTOR'S DUTIES

###### 2.1 Except as specifically noted, provide and pay for:

Labor, materials, and equipment;

Tools, construction equipment, and machinery;

Samples, shipping costs, and tests;

Necessary utilities, such as water supply, electrical power, telephones, roads, fences, and sanitary facilities, including maintenance thereof;

Other facilities and services necessary for proper execution and completion of the Work.

###### 2.2 Pay legally required sales, consumer, and use taxes.

###### 2.3 Secure and pay for legally required permits, licenses, and government fees.

###### 2.4 Give required notices.

###### 2.5 Employ workmen and foremen with sufficient knowledge, skill, and experience to perform the work assigned to them.

###### 2.6 Comply with the codes, laws, ordinances, rules, regulations, orders, and other legal requirements. Any necessary changes will be adjusted as provided in the Contract for changes in the Work.

Comply with OSHA (P.L. 91-576) and the Contract Work Hours and Safety Standards Act (P.L. 91-54).

###### 2.7 Submit written notice to Engineer of observed variance of Contract Documents from legal requirements. Any necessary changes will be adjusted as provided in the Contract for changes in the Work.

###### 2.8 Enforce discipline and good order among Contractor and subcontractor employees. Any person employed by Contractor or subcontractors who does not perform his work in a skillful manner, is incompetent, or acts in a disorderly or intemperate manner shall, at the written request of Owner, be removed from the project immediately and shall not be employed again in any portion of the Work without the approval of Owner.

###### 2.9 Provide at all times facilities for access and inspection of the Work by representatives of Owner and of official governmental agencies designated by Owner as having the right to inspect the work.

2.10 Cooperate with other contractors who may be performing work for Owner and with Owner's employees working in the vicinity of the Work done under this Contract.

### 3. CONTRACTOR'S USE OF PREMISES

3.1 Confine operations at site to areas permitted by law, ordinances, permits, and the Contract Documents.

3.2 Do not load or permit any part of a structure to be subjected to any force that will endanger its safety.

3.3 Comply with and enforce Owner's instructions regarding signs, advertisements, fires, and smoke.

3.4 Assume responsibility for protection and safekeeping of products stored on premises.

3.5 Do not discharge smoke, dust, or other contaminants into the atmosphere, or fluids or materials into any waterway as will violate regulations of any legally constituted authority.

### 4. EXISTING FACILITIES

4.1 The existing piping and other underground utilities are shown in approximate locations as determined from the Owner's records. Contractor shall be responsible for determining the exact location before commencing work in these areas. The Contractor shall also be fully responsible for any damage to the existing piping and underground utilities.

4.2 The existing facilities will be in continuous operation during the construction period.

4.3 Plan and conduct construction operations to avoid disturbing existing plant structures, piping, equipment, and services in any manner which will interrupt or impair operations, except as approved by Engineer.

4.4 Submit for approval a construction sequence and detailed drawings and written explanations of the temporary facilities and appurtenances intended to be used in maintaining the uninterrupted operation of the existing facilities.

### 5. PARTIAL OWNER OCCUPANCY

5.1 Owner, at its discretion, may place into service certain portions of the completed Work.

5.2 Provide proper access to Owner's personnel for this purpose.

5.3 Use and operation of a completed portion by Owner will constitute acceptance of that work. Notify Owner when he should cover with his own insurance the work placed in beneficial use.

5.4 Once Owner is ready to put completed work into service, a "Statement of Substantial Completion," as supplied by the Engineer, shall be completed and signed by all concerned parties.

5.5 Liability of Contractor for defects due to facility construction will extend for one year after the Work is placed in service.

## GENERAL REQUIREMENTS

### SECTION 1B

#### CUTTING AND PATCHING

##### 1. DESCRIPTION

- 1.1 Do the cutting and patching required to perform the Work. Cutting and patching shall include the cutting (including excavation), fitting, or patching necessary to:

Remove and replace defective work,

Remove and replace work not conforming to the Contract Documents,

Remove samples of completed Work for specified testing,

Install specified Work in existing construction.

- 1.2 Cutting and patching work performed when ordered in writing by Engineer shall include cutting and patching necessary for:

Inspection of covered work,

Obtaining samples of completed work for testing,

Alteration of completed work.

- 1.3 Work performed by another contractor shall not be cut or altered without written consent of Engineer.

##### 2. SUBMITTALS

- 2.1 Before doing any cutting, submit a written notice to Engineer requesting consent including:

Description of affected work,

Necessity for cutting,

Scope of cutting and patching,

Trades and products to be used and extent of refinishing.

- 2.2 Prior to doing cutting and patching identified in writing by Engineer as additional work, submit a cost estimate.

- 2.3 Notify Engineer when work is to be performed.

3. PAYMENT

- 3.1 Cutting and patching required to perform the Work will not be measured or paid for separately. The cost shall be included in the Contract Price for the items of Work that require cutting and patching.
- 3.2 Cutting and patching, when instructed in writing by Engineer, will be paid for by negotiated Change Order under the appropriate provisions of the Contract, except work done to correct defective or non-conforming work.

4. MATERIALS

Materials used for replacement of work removed shall comply with the Specifications for the type of work to be done.

5. EXECUTION

- 5.1 Provide shoring, bracing, and support as required to maintain structural integrity of the project.
- 5.2 Protect adjacent portions of the work and existing facilities from damage due to cutting and patching operations.
- 5.3 Execute excavating and backfilling as specified in Section 2B - Earthwork.
- 5.4 Restore work which has been cut or removed. Install new products to provide completed work meeting all requirements of the Contract Documents.
- 5.5 Refinish entire surfaces as necessary to provide an even and uniform finish.

## GENERAL REQUIREMENTS

### SECTION 1C

#### SUBMITTALS

##### 1. PROGRESS SCHEDULE

- 1.1 Prepare a detailed Progress Schedule in graphic form showing proposed dates of starting and completing each major division of the Work.
- 1.2 The schedule shall be consistent with the time and order of work requirements of the Specifications and shall be the basis of Contractor's operations.
- 1.3 Submit 3 copies to Engineer within 14 days after Notice to Proceed.
- 1.4 At the end of every month, submit with Payment Request a revised schedule showing the current status of the Work as compared to the projected status. The current application for a progress payment will not be processed until the revised is delivered to Engineer.

##### 2. BREAKDOWN OF CONTRACT AMOUNT

- 2.1 Submit a typewritten breakdown of contract amount on the form contained in this Document for use in computing and checking periodical payment estimates.
- 2.2 No payment will be made until the breakdown has been submitted and accepted by Engineer and Owner.
- 2.3 The breakdown shall be in detail and representative of the proposed work.

##### 3. SHOP DRAWINGS, PROJECT DATA, AND SAMPLES

###### 3.1 General

- 3.1.1 Submit to Engineer shop drawings, project data, and samples required by the Specifications.

###### 3.2 Shop Drawings

- 3.2.1 Shop drawings are original drawings prepared by the Contractor, subcontractors, suppliers, or distributors which illustrate some portion of the Work and show fabrication, layout, setting, or erection details of equipment, materials, and components.
- 3.2.2 Contractor shall submit shop drawings electronically in PDF format.

###### 3.3 Project Data

- 3.3.1 Project data are manufacturers' standard schematic drawings, catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.

- 3.3.2 Modify drawings to delete information not applicable and to add information applicable to the project.
- 3.3.3 Mark copies of printed material to identify pertinent materials, products, or models.
- 3.3.4 Show dimensions and clearances required, performance characteristics and capacities, and wiring diagrams and controls.
- 3.3.5 Submittal procedures shall be the same as for shop drawings.

3.4 Contractor Responsibilities

- 3.4.1 Review and approve shop drawings, project data, and samples before submitting them.
- 3.4.2 Verify field measurements, field construction criteria, catalog numbers, and similar data.
- 3.4.3 Coordinate each submittal with the requirements of the Contract Documents.
- 3.4.4 Submit shop drawings for major equipment items in one package to permit checking complete installation details.
- 3.4.5 In a clear space above the title block or on the back, hand stamp the following and enter the required information:

Specification Section .....

This document has been checked for accuracy of content and for compliance with the Contract Documents and is hereby approved. The information contained herein has been coordinated with all involved contractors.

Signed .....

- 3.4.6 Contractor's responsibility for errors, omissions, and deviations from requirements of the Contract Documents in submittals is not relieved by Engineer's review.
- 3.4.7 Notify Engineer in writing at time of submittal of deviations in submittals from requirements of the Contract Documents.
- 3.4.8 Do not install materials or equipment which require submittals until the submittals are returned with Engineer's stamp and initials or signature indicating approval.
- 3.4.9 Revise returned shop drawings as required and resubmit until final approval is obtained. Indicate on the drawings any changes which have been made other than those requested by Engineer.
- 3.4.10 Submit new project data and samples when the initial submittal is returned disapproved.

3.4.11 No claim will be allowed for damages or extension of time because of delays in the work resulting from rejection of material or from revision and resubmittal of shop drawings, project data, or samples.

### 3.5 Engineer's Duties

3.5.1 Engineer will review submittals for compliance with the Contract Documents and with the design concept of the project.

3.5.2 Review of a separate item does not constitute acceptance of an assembly in which the item functions.

3.5.3 Engineer will affix a stamp to the returned copy of each submittal. The stamp will be marked to indicate whether the submittal is "Reviewed," "Furnish As Corrected," or "Revise and Resubmit," and an explanation will be given if the submittal is unsatisfactory. The stamp will be initialed or signed certifying the submittal review.

## 4. OPERATING AND MAINTENANCE MANUALS

4.1 Furnish three (3) hard copies and two (2) electronic copies on CD of manuals of instructions for operation and maintenance of each item of equipment furnished. Each manual shall be bound in a binder for a total of three (3) complete and bound manuals.

4.2 Include instructions for all components of the equipment, whether manufactured by the supplier or not, including valves, controllers, and other miscellaneous components.

4.3 Included Material as follows:

- Parts lists,
- Exploded or sectional views,
- Recommended lubrication and maintenance procedures,
- Internal wiring and piping diagrams,
- Detailed description of process, where applicable,
- Operating procedures,
- Other pertinent information of value to obtain peak performance.

### 4.4 Equipment Maintenance Schedule

4.4.1 In addition to the equipment operation and maintenance manuals, an equipment maintenance schedule shall be prepared for each piece of equipment. The schedule shall list routine preventive maintenance recommended by the equipment manufacturer. The schedule shall be listed as daily, weekly, monthly, quarterly, semi-annually, and annually.

4.4.2 The items listed in the schedule shall be those maintenance functions that Contractor and equipment suppliers expect the plant operating personnel to follow in order to meet warranty provisions when the equipment is turned over to Owner.

4.4.3 The schedule for each piece of equipment shall be prepared in the same format. No photocopies or reproductions of the various equipment operation and maintenance manuals will be permitted.

## GENERAL REQUIREMENTS

### SECTION 1D

#### TESTING

##### 1. GENERAL

- 1.1 Perform the inspections and tests required by laws, ordinances, rules, regulations, or orders of public authorities.
- 1.2 Perform the inspections and tests required by the Specifications.
- 1.3 Provide product certifications as required by the Specifications.
- 1.4 Test, adjust, balance, and operate mechanical and electrical equipment to demonstrate that they have been properly assembled, aligned, adjusted, wired, and connected. Make any adjustments or replacements found necessary.
- 1.5 Neither observations by Engineer, nor inspections, tests, or approvals by other than Contractor shall relieve Contractor from his obligation to perform the Work in accordance with the requirements of the Contract Documents.

##### 2. TESTING LABORATORY SERVICES

- 2.1 Employ and pay for the services of an independent testing laboratory to perform specified services.
- 2.2 Obtain approval of Owner before employing laboratory.
- 2.3 Laboratory shall meet "Recommended Requirements for Independent Laboratory Qualification" published by the American Council of Independent Laboratories.
- 2.4 Laboratory shall meet basic requirements of ASTM E-329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel As Used in Construction."
- 2.5 Laboratory Duties
  - 2.5.1 Perform specified tests and services.
  - 2.5.2 Comply with specified standards, ASTM, other recognized authorities, and as specified.
  - 2.5.3 Ascertain compliance with requirements of Contract Documents and so note in writing on all reports.
  - 2.5.4 Promptly notify Engineer and Contractor of irregularities or deficiencies of work observed during performance of services.
  - 2.5.5 Promptly submit 3 copies of reports of inspections and tests to Engineer.
  - 2.5.6 Include in the reports date, project title and number, name and signature of inspector, date of inspection or sample, record of temperature and weather, date

of test, identification of product and Specification Section, location in project, type of test, and observations regarding compliance with requirements.

## 2.6 Contractor's Responsibilities

- 2.6.1 Cooperate with laboratory personnel.
- 2.6.2 Provide to laboratory samples of materials to be tested in required quantities.
- 2.6.3 Furnish to the Engineer three copies of mill test results.
- 2.6.4 Provide facilities for storage and curing of test samples.
- 2.6.5 Notify Engineer sufficiently in advance of time and place of tests to be made at point of manufacture, assembly, or fabrication to permit Engineer to witness tests if he so desires.

## 3. TESTING OF TANKS, PIPING, AND EQUIPMENT

### 3.1 General

- 3.1.1 Contractor shall be responsible for all labor, tools, equipment, and supplies needed to test. Tests shall be witnessed by representatives of Contractor, Engineer, and (when appropriate) the manufacturer. Written reports, check lists, or test sheets giving pertinent data shall be prepared for each item of mechanical equipment, signed or initialed by required witnesses, and turned over to Engineer.

### 3.2 Tanks

- 3.2.1 All concrete and/or steel tanks shall be tested for watertightness prior to backfilling. Concrete tanks shall be tested in accordance with ACI350.1R-93/AWWA 400-93, latest edition. Other tanks shall be filled with water for a period of 48 hours to determine if leaks exist. Liquid level drop shall not exceed 1/2-inch during this period.

Should leaks exist, they shall be patched and repaired, after which they shall be retested. Such testing shall be done in a manner approved by the Engineer, preferably before backfilling. Water used to fill tanks shall be supplied by the Owner and conveyed to the tank by the Contractor.

### 3.3 Piping

- 3.3.1 Piping shall be tested in accordance with Section 17B.

### 3.4 Equipment

- 3.4.1 A representative of the equipment manufacturer shall be present to assist with the start-up and testing of all equipment.
- 3.4.2 Electrical tests shall be conducted on all motors to verify that actual conditions do not exceed nameplate ratings.
- 3.4.3 Tests shall be made under normal operating conditions except where special test conditions are set out in equipment specifications. Checks shall be made for

noise, vibration, direction of rotation, power consumption, overheating, misalignment, operating speed, and such other parameters as may be needed to indicate proper performance of equipment.

3.4.4 Pump performance shall be checked against head-capacity curves submitted and approved.

## GENERAL REQUIREMENTS

### SECTION 1E

#### MATERIALS AND EQUIPMENT

##### 1. STORAGE

- 1.1 Store construction materials on wooden platforms or other hard, clean, dry surfaces.
- 1.2 Protect perishable materials with weathertight covers as recommended by the material manufacturers.
- 1.3 Store mechanical and electrical equipment under weather-proof, dry, and temperature controlled conditions as recommended by the manufacturer.
- 1.4 Equipment installed but not in operation shall be considered in storage.
- 1.5 Protect stored equipment from condensation by energizing enclosure space heaters, by providing supplementary heat, or by other means as recommended by the equipment manufacturer.
- 1.6 Fill gear boxes of stored equipment with oil and protect bearings from rusting by rotating shafts regularly and routinely as recommended by the equipment manufacturers.
- 1.7 Submit details of proposed storage and protective measures, including systems, procedures, and inspection schedules, to Engineer for review with the equipment shop drawing submittals.
- 1.8 Repair or replace equipment which deteriorates during storage or after installation before it is placed in full operation.

##### 2. EQUIPMENT GUARDS

- 2.1 All moving parts of equipment shall be provided with removable, rigidly constructed and mounted equipment guards of the types required for operator safety and as required by the provisions of all local, state, and federal codes, ordinances, regulations, and laws.

##### 3. SHOP PRIMERS

- 3.1 Shop prime assemblies, castings, steel pipe, and fabricated elements with a primer compatible with the final paint system specified in Section 9A.
- 3.2 If shop primer is not compatible with final paint, completely remove before field painting and replace with compatible prime coat.
- 3.3 Protect with grease or other means surfaces which are not painted, such as shafts, chains, and bearings.

#### 4. EQUIPMENT ANCHOR BOLTS

- 4.1 Anchor bolts and nuts for equipment shall be Type 304 stainless steel, ASTM A-320. Bolts shall be sized as recommended by the manufacturer of the equipment.
- 4.2 Anchor bolts for mounting equipment which requires careful alignment, such as pumps, blowers, and motors, and which have a fixed non-adjustable base or bolt hole drilling, shall be installed in Series 300 stainless steel sleeves with a diameter equal to twice the bolt diameter. Bolts for angle brackets and other similar non-critical alignment supports need not have sleeves but shall, as well, be Series 300 stainless steel.
- 4.3 All equipment, unless otherwise directed by Engineer, shall be mounted on minimum 4-inch concrete pad. Concrete shall be installed in accordance with Division 3.

#### 5. ADDITIONAL ELECTRICAL WORK

- 5.1 The electrical work to be performed is shown on the Drawings and is specified in Division 16 of this document.
- 5.2 Furnish and install with furnished equipment any additional electrical work required for proper operation.
- 5.3 Motor horsepowers shown on the electrical Drawings are approximate only. Provide or make adjustments to the electrical equipment and wiring required for the motor horsepowers actually furnished.

#### 6. WARRANTY

- 6.1 Equipment shall be warranted by manufacturer for a period of not less than one (1) year.

## GENERAL REQUIREMENTS

### SECTION 1F

#### CLEANING

##### 1. DESCRIPTION

- 1.1 A program to maintain site free from accumulations of waste, debris, and rubbish caused by construction operations shall be submitted for approval.
- 1.2 When Work is complete, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials and clean all sight-exposed surfaces. Leave Project clean and ready for occupancy.

##### 2. CLEANING DURING CONSTRUCTION

- 2.1 Perform cleaning operations daily to ensure that structures, grounds, and public property are maintained free from accumulations of waste materials and rubbish.

##### 3. FINAL CLEANING

- 3.1 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed interior and exterior finished surfaces of buildings and interior equipment and from other prominent above ground structures.
- 3.2 Repair, patch, and touch up marred surfaces to specified finish to match adjacent surfaces.
- 3.3 Remove all scaffolding, planks, tools, rags, blast media, and all other materials not part of the structural or operating facilities of the tank. Thoroughly clean and wash the walls, floor, roof, and operating facilities by use of a high pressure water jet, sweeping, scrubbing, and other effective means. Flush out and otherwise remove all water, debris, and foreign materials accumulated during this cleaning operation. Thoroughly clean and flush out the bottom of the tank and piping.
- 3.4 After work under this Contract has been completed, remove all debris and leave site in pre-project condition.

TABLE OF CONTENTS  
FOR  
DIVISION 16  
ELECTRICAL

<u>SECTION</u>		<u>PAGE</u>
16A	GENERAL ELECTRICAL APPURTENANCES	1-6
16B	ELECTRICAL APPURTENANCES	1-12
16C	DRY TYPE TRANSFORMERS	1-2
16D	VARIABLE FREQUENCY DRIVES	1-2

## ELECTRICAL

### SECTION 16A

#### GENERAL ELECTRICAL APPURTENANCES

##### 1. GENERAL

- 1.1 Furnish and install the electrical work specified or indicated on the Contract Drawings. The specifications and drawings do not include every equipment and conduit detail but all devices and appurtenances necessary to fully complete the work, whether the details are particularly specified or not, shall be included.
- 1.2 Certain items of equipment and control, such as electric motors, solenoid valves, and similar items, are provided under other divisions of the specifications and shall be connected as a part of the work under this Division, unless otherwise indicated.
- 1.3 Horsepower ratings listed on the Contract Drawings for motors are approximate.
- 1.4 See Division 1 for other requirements relating to furnishing and installing the work required under this Division.

##### 2. INCLUDED WORK

- 2.1 Concrete for equipment bases, conduit encasement, handholes, manholes and as otherwise required shall be in accordance with Division 3.
- 2.2 Excavation, backfill, and related work shall be in accordance with Division 2.

##### 3. CODE COMPLIANCE

Electrical work shall comply with the ordinances and bylaws of the City, State, Federal, or other political subdivision having jurisdiction. In the absence of other more stringent authority, the work shall conform to the requirements of the National Electrical Code, edition in effect at project location.

##### 4. STANDARDS

Where materials and methods are indicated to be in conformance with a standard specification, it shall refer to the latest edition of the specification including revisions. Listing of a standard specification without further explanation means that the material or method shall conform to the specification.

##### 5. VERIFICATION OF CONTRACT DRAWINGS

- 5.1 The Contract Drawings indicate generally the locations of outlets, fixtures, equipment, conduit, and wiring, and the details necessary for a complete installation. To avoid interferences, changes may be required from the installation shown on the Contract Drawings. Obtain approval of the Engineer before making changes.
- 5.2 Do not install electrical work for any item of equipment specified under this or other divisions until shop drawings of the equipment, approved by the Engineer, are available.

6. SUBMITTALS

Submit shop drawings of equipment assembled off the site and project data on equipment or appliances included in the project, as specified in Section 1C.

7. CATALOG NUMBERS

Where manufacturer's catalog or figure numbers are given, supply the equipment represented by these numbers. If the manufacturer has revised the numbers since publication of this specification but still produces the item specified, furnish equipment or appurtenances identical to that originally represented by the catalog or figure numbers given. If a manufacturer has redesigned any of the products specified, furnish the improved model regardless of whether or not the item retains its original numbers.

8. MATERIALS AND EQUIPMENT

8.1 The sizes and capacities of electrical materials and equipment shall conform to the latest requirements of the NEC, NEMA, the prevailing State and Local electrical codes, and to the applicable rules and regulations of the electrical utility serving the project.

8.2 Material and equipment shall be the products of established and reputable manufacturers. They shall be new and of first-class construction and shall be guaranteed to perform the service required. Materials and equipment shall bear the label of approval of the UL when approval is available for the type of material or equipment.

8.3 Equipment used as service equipment shall be UL marked "Suitable For Use As Service Equipment."

8.4 Similar or identical material or equipment shall be the product of the same manufacturer or supplier to reduce maintenance expense.

9. INSTALLATION

Electrical work shall be installed in a neat and workman-like manner in accordance with the best practices of the trade. Unless otherwise indicated, materials and equipment shall be installed in accordance with the manufacturer's recommendations.

10. PROTECTION OF WORK

Protect electrical work fixtures, equipment, and appurtenances from damage during construction and until final acceptance of the completed project. Close conduit openings with plugs or caps during installation. Cover fixtures and equipment and protect against dirt, water, chemicals, or mechanical injury. Before final acceptance, clean fixtures and equipment and deliver to the Owner in perfect condition.

11. EQUIPMENT FOUNDATIONS

Equipment supported from the floor, except when it contains roll-out type equipment, shall be anchored to a 4-inch high concrete pad. After equipment is in place and aligned, grout the bases as specified in Division 3.

## 12. NAMEPLATES

- 12.1 Provide nameplates on electrical equipment and appurtenances located remote from, motor control centers, panel boards, control panels, and consoles.
- 12.2 Nameplates shall be laminated composition material consisting of an inner black layer and outer white layer with polished surfaces on both sides so that the engraved inscription will be black on a white background. Nameplates shall be not less than 3/32-inch thick with a 1/32-inch bevel on the front edges. Nameplates shall be 2 x 3/4-inch size or more, with 3/8-inch lettering. Inscriptions shall designate the item of equipment controlled, and circuit number.
- 12.3 Attach nameplates with brass or stainless-steel screws or other approved devices, but pressure type adhesives shall not be used. Where space is not available on the item for mounting the nameplate, install nearby where directed by the Engineer.

## 13. FINISH GRADE

References to finish grade in Division 16 or on the electrical drawings means the final grade outside the structure.

## 14. ELECTRIC SERVICE

- 14.1 Provide all equipment, wiring, and connections required for installation of a new electrical distribution system including service, feeders, panelboards, branch circuits, lighting, utility metering, generator, and connections to all equipment requiring electrical power.
- 14.2 Ascertain the items of equipment, wiring, and connections required for a complete and ready-to-operate electric power service and metering installation in compliance with the requirements of the electric utility serving the project.
- 14.3 Obtain from the electric utility approval of the electric service and metering before installation.
- 14.4 Middle Tennessee Electric (MTE) will provide 277/480-volt, 3-phase, 4-wire 60 Hz electrical power at the locations shown on the Contract Drawings.
- 14.5 Pay any charges made by the electric utility serving the project for relocation of existing overhead primary lines and/or for provision of new service and include the cost in the bid price.

## 15. TESTING

- 15.1 Before final acceptance, test the electrical work, material, and equipment provided under this Division. All testing shall be in conformance with International Electrical Testing Associations (NETA) Guidelines
- 15.2 Tests may be made progressively as parts of the work are completed or may be made when the work is complete, at the option of the Engineer. Before testing, check the work for proper connections and adjustments and place in satisfactory operating condition.
- 15.3 Adjust, repair, or replace improper or faulty connections materials, and equipment discovered during the tests.

#### 15.4 Work Under Other Divisions

- 15.4.1 Before final acceptance, test the electrical material and equipment provided under other divisions and connected under this Division. This material and equipment shall be tested the same as that specified for the work under this Division.
- 15.4.2 If failure occurs because of the connecting or adjusting methods used, change, repair, or replace, as determined by the Engineer, the material or equipment which failed.

#### 15.5 Work By Other Contractors

- 15.5.1 Before final acceptance, test the electrical material and equipment provided under other contracts and connected under this Contract. This material and equipment shall be tested the same as that specified for the work under this Contract.
- 15.5.2 The Contractor will not be responsible for the failure of material and equipment provided under other contracts unless failure is due to the connecting or adjusting methods used. If such is the case, change, repair, or replace, as determined by the Engineer, any material or equipment that has failed.

#### 15.6 Tests Shall Include The Following:

- 15.6.1 Examine the rating of motor starter overload protective devices, motor circuit protectors, and motor nameplate full load running current, and determine whether the overloads are suitable for motor protection. Replace inadequate protective devices and set trips of motor circuit protectors before energizing motors.
- 15.6.2 Measure the line-to-line and line-to-neutral voltages at the load terminals of the main circuit breaker or switch or main incoming lugs of each piece of power generation and distribution equipment.
- 15.6.3 Measure the line-to-line and line-to-neutral voltages at the secondary terminals of transformers.
- 15.6.4 Set and adjust taps on transformers as required by the Engineer.
- 15.6.5 Measure the line currents of each phase of each motor under load.
- 15.6.6 Align and adjust fixtures for proper light distribution as requested by the Engineer. Check fixtures and ballasts for proper operation.
- 15.6.7 Set and adjust isolators, isolating switches, disconnecting devices, contactors, motor starters, control switches, relays, thermostats, pushbutton stations, adjustable trip circuit breakers, motor starting switches, electrodes and other switching and control devices for proper contacts and operation.
- 15.6.8 Check proper rotation, phase sequence and connections of busses, wires, cables, transformers, and motors.
- 15.6.9 Check control, alarm and signal connections associated with all equipment.

- 15.6.10 Test insulation resistance to determine serviceability of wires, busses, connections, splices, material, and equipment as follows
- 15.6.11 Where motors are furnished with multiple winding temperature detectors, one of the detectors shall be connected into the circuit for starting and testing purposes. After the motor has been under load conditions for two hours, the detector with highest temperature shall be included in the motor control circuits. The other winding temperature detectors shall be spare and shall be terminated in accordance with the motor manufacturer's recommendation.
- 15.7 Tests shall be made by a firm regularly engaged in the testing of electrical equipment. All quantitative measurements shall be recorded and compared with the test values listed in NETA ATS-2017 Acceptance Testing Specifications or, if available, manufacturer's recommendations. Any corrective actions taken shall be recorded along with final measurement values.
- 15.8 Notify the Engineer in writing when the work has been completed and tested, ready for operation. The Engineer may require additional tests before the facility is placed in operation. Perform the additional tests and make repairs and improvements of material, equipment, or work found by the Engineer to be defective or of not meeting the requirements of the specifications.
16. RECORD DRAWINGS
- 16.1 Alterations and additions to the electrical installation made during execution of the work shall be neatly and plainly marked with red pencil on a set of record drawings kept at the Contractor's field office.
- 16.2 When the work is complete, and before final payment, submit to the Engineer a complete set of record drawings.
- 16.3 Submit two sets of prints of the record drawings for approval. After approval, stamp each with "Record Drawing" and affix the signature of the supervising Engineer or electrician to each drawing.
17. DATA TO BE FILED WITH OWNER
- 17.1 Furnish the following data when testing is complete and before final acceptance of the work. The data shall be compiled in 8-1/2 x 11-inch hard cover booklets, arranged by buildings or areas where more than one building or area is involved, and filed with the Engineer in triplicate.
- 17.1.1 Nameplate data of each motor and equipment identification, a record of measured line currents under load for each motor, and location of the motor within the plant.
- 17.1.2 A list of the manufacturer's name and type, code number, or ampere rating of overload heaters for each motor starter and the trip settings of each motor circuit protector.
- 17.1.3 A list of the line-to-line and line-to-neutral voltages at the load terminals of the main circuit breaker, switch or main incoming lugs of each piece of power generation and distribution equipment.

- 17.1.4 A list of the line-to-line and line-to-neutral voltages at the secondary terminals of transformers.
- 17.1.5 Interconnection wiring, diagrams for the process, instrumentation, heating, and ventilating equipment connected under this Division. The diagrams shall show connections between motor starters, control panels, motors, devices, and other equipment and shall include identification of terminals, color coding, and numbering of interconnection wires.

## ELECTRICAL

### SECTION 16B

#### ELECTRICAL APPURTENANCES

##### 1. GENERAL

1.1 Furnish and install the electrical appurtenances specified in this Section or shown on the Drawings required for the electrical work on this Contract.

1.2 Electrical work shall be as specified herein unless specifically indicated otherwise.

##### 2. LIGHTING AND AUXILIARY SYSTEM

###### 2.1 Fixtures

Lighting fixtures shall be in accordance with the schedules on the Drawings and shall include lamps. Fixtures shall be by manufacturers scheduled on Drawings or equal.

###### 2.2 Toggle switches

Toggle switches shall conform to NEMA WD-1. They shall be brown, AC only, rated 20-amp, 120-277-volt, Hubbell #1221 (single pole), Hubbell #1223 (3-way), Hubbell #1224 (4-way).

###### 2.3 Receptacles

Duplex convenience outlets shall conform to NEMA WD-1 and shall be 2-pole, 3-wire, brown, and rated 20-amp, 125-volt, Hubbell #5262. Other receptacles shall be as indicated in the schedules on the Drawings.

###### 2.4 Plates

Wall plates for flush steel boxes shall be Type 302 stainless steel with satin finish, 0.035 inch thick.

###### 2.5 Covers

Cast covers for toggle switches shall be Appleton No. FSK-IV, Crouse Hinds No. DS181, or equal. Cast covers for duplex convenience outlets shall be Appleton No. FSK-IVDR, Crouse Hinds No. WLRD-1, or equal. Cast covers for other receptacles shall have threaded caps attached to the covers with lengths of chain.

###### 2.6 Surge Protection Device

Provide surge protection devices where indicated on Drawings. Protection devices shall be Advanced Protection Technologies HP Series or equal, at main distribution panel and Series 100 or equal at 120/208 Volt panels and shall be U.L. 1449 3<sup>rd</sup> Edition listed. Transient voltage surge suppressors shall have a minimum rating of 80,000 amps surge current per phase (8/20 microseconds current waveform).

### 3. ELECTRICAL RACEWAY SYSTEM

3.1 Unless otherwise specified or indicated, all conductors shall be installed in raceways.

#### 3.2 Raceways

Rigid steel conduit shall be heavy-wall full mild steel conforming to ANSI C80.1. Outside surfaces, including threads and couplings, shall be hot dipped or electro galvanized or sherardized. Connections shall be threaded and hot galvanized after cutting.

#### 3.3 Flexible Metallic Conduit

Flexible metal conduit shall be American Brass Co. Sealtite Type UA, International Metal Co. Liquidtite Type UA, or equal. Fittings shall be as recommended by the manufacturer. Connectors shall have nylon-insulated throats.

#### 3.4 Non-metallic Conduit

Non-metallic conduit shall be PVC Schedule 40 conforming to UL651. Fittings shall be as recommended by the conduit manufacturer.

#### 3.5 Conduit Fittings

3.5.1 Conduit couplings, elbows, and nipples shall conform to the Specifications for the conduit.

3.5.2 Locknuts, bushings, reducers, and similar conduit fittings shall be galvanized, or cadmium plated and shall conform to UL514.

3.5.3 Cast metal or malleable iron conduit fittings and outlet boxes shall be galvanized, or cadmium plated and shall conform to UL514. Aluminum used for cast metal fittings shall be copper free. Cast metal or malleable iron outlet boxes shall be at least 2-1/2 inches deep. Covers for fittings and outlet boxes shall be of the same material, designed to fit the box or fitting, and complete with gaskets.

3.5.4 Sheet metal outlet boxes shall be galvanized, or cadmium plated and shall conform to UL514. Sheet metal outlet boxes for lighting fixtures shall be not less than 4-inch octagon. Other sheet metal outlet boxes shall be not less than 4-inches square. Multiple-gang boxes shall be one-piece construction. Covers for exposed boxes shall be of the same material and shall fit the box.

#### 3.6 Conduit Hubs

Conduit hubs not integral with a box or fitting shall be malleable iron or stainless steel with nylon-insulated throats. Hubs shall have positive grounding and shall be equipped with O-rings of neoprene for a watertight installation.

#### 3.7 Junction and Pull Boxes

3.7.1 Junction boxes and pull boxes shall be cast metal or sheet steel as specified or indicated. Covers shall be of the same material and shall fit the boxes.

### 3.7.2 Cast metal boxes

3.7.2.1 Cast metal boxes shall be close grain grey iron or copper-free aluminum alloy, free from blowholes, shrinkage cracks, cold-shuts, blisters, or other defects. Warped or defective boxes will not be accepted.

3.7.2.2 Boxes and covers shall have machined joints. Drilling and tapping shall be accurate. Boxes shall be provided with clean cut, neoprene gaskets.

3.7.2.3 Cover screws shall be copper-silicon alloy for cast iron boxes and stainless steel for cast aluminum boxes.

3.7.2.4 Cast iron boxes shall be hot-dipped galvanized inside and outside. Surfaces shall be smooth before galvanizing.

### 3.7.3 Sheet Steel Boxes

3.7.3.1 Sheet steel boxes 100 cubic inches or less in size shall be not less than 14-gauge material; boxes 100 - 1,800 cubic inches shall be not less than 12-gauge; and boxes larger than 1,800 cubic inches shall be not less than 10-gauge.

3.7.3.2 Unless otherwise approved by Engineer, boxes 3 x 3 x 1-1/2 feet and larger in any dimension shall have a framework of structural steel members sized to provide a rigid and substantial box. The structural steel members shall be welded, bolted, or riveted together and to the sheet steel.

3.7.3.3 Boxes shall have removable covers of the same gauge steel as the boxes, or heavier if required to prevent bulging or warping.

3.7.3.4 Covers shall be attached with copper silicon screws. Covers heavier than 20 lbs. shall have two cast or pressed steel handles. Boxes and covers shall be hot-dipped galvanized inside and outside after fabrication.

### 3.8 Expansion Fittings

3.8.1 Expansion fittings for exposed conduit shall have external bonding jumpers for ground continuity and shall be O. Z. Electrical Mfg. Co. Type EX, Crouse-Hinds Type XJ, or equal.

3.8.2 Expansion fittings embedded in concrete shall be expansion deflection type consisting of molded neoprene sleeves with bonding jumpers passing through separate waterproof compartments and two silicon bronze couplings. They shall permit a 3/4-inch expansion and contraction and a 3/4-inch deflection without deformation.

### 3.9 Wall Seals

3.9.1 Wall seals shall have sealing assemblies on both sides of walls, and each body size shall accept several different size sealing assemblies.

3.9.2 Seal sleeves shall be PVC oversize for conduit sizes through 4 inches and steel for larger sizes. Castings shall be malleable iron with hot-dipped galvanized finish. Wall sleeves shall include a sealing ring between each seal body and the oversize sleeve and membrane clamp.

### 3.10 Raceway System Installation

3.10.1 The electrical installation shall consist of insulated conductors installed in metallic raceways. No raceway smaller than 3/4-inch shall be installed except where indicated.

3.10.2 Raceways shall be rigid galvanized steel conduit, except as noted herein.

3.10.3 Space and support raceways concealed in concrete so that they will not affect the structural strength or watertightness of the concrete. Place them in the approximate center of slabs, walls, and footings.

3.10.4 Raceways shall not be in contact with reinforcing steel. Support the raceways to maintain location and spacing during concreting operations, and if necessary, provide metal supports for this purpose.

3.10.5 Install exposed raceways in straight lines at right angles to or parallel with walls, beams, or columns, and group together as much as possible. Make changes in direction of exposed runs with symmetrical bends or cast metal conduit boxes.

3.10.6 Conduit runs shall have no more than the equivalent of three 1/4 bends (270 degrees total) between pull points. Raceway bends shall have a radius as long as possible. Short radius bends shall not be used unless approved by Engineer. Make field bends with approved hickies or conduit bending machines.

3.10.7 If possible, raceways shall drain to the nearest box or fitting. If not possible, provide other means for draining entrapped water.

3.10.8 Provide wall seals for raceways passing through exterior walls of structures below grade, except at electrical manholes.

3.10.9 Provide rigid metallic sleeves where exposed raceways pass through floors, walls (except exterior walls below grade), and ceilings. Sleeves shall extend 3 inches above floors or ceilings and shall be flush with each side of walls. Pack the space between the outside of conduits and the inside of sleeves with oakum and grout or plaster of paris.

3.10.10 Raceways in the ground near piping, in conduit groups of (4) or more, or used as feeder conduits, shall be protected on all sides by concrete not less than 3 inches thick.

3.10.11 Make up threaded raceway joints with a conductive compound applied to male threads only to insure low- resistance ground continuity.

3.10.12 Concrete-tight split couplings may be used in raceways embedded in concrete instead of union type couplings. After installation and before concrete is poured, demonstrate to Engineer that the installation has low resistance.

- 3.10.13 Provide expansion fittings in raceways crossing expansion joints. Expansion locations are shown on the structural or architectural Drawings.
- 3.10.14 Running threads shall not be used.
- 3.10.15 Provide reducers as required to connect conduit to equipment.
- 3.10.16 Provide liquidtight flexible metal conduit not more than 3 feet long to connect motors, limit switches, solenoid valves, and other devices where vibration is possible or flexibility is desired. Fittings shall be approved for the purpose and, where required, shall include a method of terminating the bonding and grounding conductor, and a grounding conductor shall be installed in the raceway.
- 3.10.17 Provide conduit hubs to terminate conduits at cast metal or malleable iron boxes which do not have integral hubs and at steel enclosures or boxes located below grade floor elevation in structures.
- 3.10.18 Provide junction and pull boxes with covers where indicated. The size of junction and pull boxes shall be in accordance with the NEC, but larger boxes shall be provided where shown. Larger sizes or additional boxes than those shown or required may be installed to utilize standard sizes or to facilitate the installation.
- 3.10.19 Junction and pull boxes which receive conduit drainage shall have drainage openings in the bottom and vent openings in the bottom or sides. Install surface junction and pull boxes with a 1/2-inch clearance between the box and the surface. Spacers shall be 1 x 1/2 x 1/8-inch bar channels. Wood spacers shall not be installed.
- 3.10.20 The size of outlet boxes shall be in conformance with the NEC as a minimum.
- 3.10.21 Sheet metal boxes installed in masonry walls shall be square cornered tile type or standard boxes which do not have attached lighting fixtures.
- 3.10.22 Provide plates and covers on outlet boxes which do not have attached lighting fixtures.
- 3.10.23 Unless otherwise indicated, outlet, junction, and pull boxes less than 1,800 cubic inches shall be cast metal or malleable iron when installed:
- Below grade floor elevation of structures, except fixture outlet boxes in ceilings.
- Exposed less than 7 feet above the finished floor on floors above grade within a structure.
- Exposed to the weather including those installed flush with the outside surface of exterior walls. These boxes shall be NEMA 4 unless noted otherwise.
- 3.10.24 Install only one device in a single-gang position. Flush boxes shall have trim, where required, to cover irregularities in masonry, concrete, and plaster.
- 3.10.25 Fasten raceways to sheet metal boxes, cabinets, panels, and similar devices with two locknuts where required by the NEC, where insulating bushings are used, or where bushings cannot be brought into firm contact with the boxes. Provide

bushings on the ends of raceways unless the conduit fittings are insulated throat type. Bushings shall be insulating type where required by the NEC.

- 3.10.26 Until conductors are pulled, the ends of raceways shall be plugged with tapered plugs or capped bushings. Clean raceways with a dry swab before pulling conductors. Clogged raceways shall be freed of obstructions or be replaced.

### 3.11 Raceway Supports

- 3.11.1 Support surface-mounted raceways using one-hole, cadmium plated, malleable iron clamps with clamp backs which provide clearance between the raceways and the mounting surface.
- 3.11.2 Support other raceways by trapeze, rings, or clevis hangers. Supports for raceways 2-inch and smaller shall be cadmium plated adjustable swivel ring hangers, and for larger raceways supports shall be galvanized adjustable clevis type hangers.
- 3.11.3 Trapeze hangers shall be structural channels, angle irons, or preformed channel shapes with raceways held in place by U-bolts, clips, or clamps. Hangers shall have edges ground and dressed and shall be hot-dipped galvanized after fabrication. Preformed channels shall be not less than 1-5/8 x 1-5/8 inches by 14-gauge, and field-cut edges shall have end caps.
- 3.11.4 Do not use chain, wire, or perforated strap hangers.
- 3.11.5 Do not support raceways from pipelines or other raceways.
- 3.11.6 Fastenings shall be wood screws to wood; toggle bolts to hollow masonry walls; expansion bolts to concrete or solid masonry walls; and machine screws, welded threaded studs, or spring tension clamps to steel. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used in lieu of expansion bolts, machine screws, or wood screws.
- 3.11.7 Expansion anchors shall be steel wedge type not less than 1/4-inch size. They shall extend at least 3 inches into concrete or masonry.
- 3.11.8 Power set fasteners shall be not less than 1/4-inch size and shall extend at least 1-1/4 inches into concrete.
- 3.11.9 Inserts in concrete and slabs to support raceways shall be provided under this Division. Inserts for individual hangers shall be galvanized malleable iron and shall include removable nuts held in place by V-type teeth on the inserts. Continuous slotted channel inserts shall be on the galvanized steel with integral anchors at 6-inch centers. Factory finished steel snap-on cover plates shall be provided on channel inserts between support attachments.

### 3.12 Underground Raceway Installation

- 3.12.1 Raceways installed underground and under ground floor slabs may be non-metallic turning up with rigid galvanized elbows. Conduits for 4-20mA signal conductors shall be in rigid galvanized or schedule 80 PVC.

- 3.12.2 Non-metallic raceways shall include ground conductors to maintain grounding continuity. The ground conductors shall be sized in accordance with the NEC. Ground conductors shall be bonded to the grounded portion of the raceway system at each end of non-metallic raceways.
- 3.12.3 Where duct bank abut walls of building and/or structures, provide steel reinforcing as required to tie duct bank and wall together to prevent duct bank settling which could result in shearing of conduits.
- 3.12.4 Seal underground raceways entering structures with duct seal or equivalent material at both ends.

#### 4. ELECTRICAL WIRE AND CABLE

##### 4.1 General

- 4.1.1 In this Specification and on the Drawings, the words wire, cable, and conductor are used interchangeably and shall mean insulated conductor as defined in the NEC.
- 4.1.2 Provide the wire and cable required to connect power, branch, control, and signal circuits as indicated and as specified.
- 4.1.3 Wire and cables shall be delivered in full reels and shall be protected against injury. UL approved tags showing the manufacturer's name and the type of insulation, size, and length of wire in each coil or reel shall be attached.
- 4.1.4 Conductors shall be copper wire. Conductors No. 8 and larger shall be stranded; smaller sizes shall be solid, except control wiring shall be stranded.
- 4.1.5 Insulation and outer covering, whether metallic or non-metallic, shall be designed for the conditions under which the wire or cable is used. Wires and cables for power, branch, and control circuits operating at 480 volts or less shall have 600-volt insulation, except for fixture wire and signal cable.
- 4.1.6 Wire smaller than No. 12 shall not be used unless shown.
- 4.1.7 Fixture wire shall be in compliance with the NEC.
- 4.1.8 600-volt cables shall be UL listed.

##### 4.2 600-Volt Wire and Cable

- 4.2.1 All 600-volt wire and cable No. 8 size and larger shall be single-conductor copper with heat and moisture resistant thermoplastic insulation type THWN.
- 4.2.2 All 600-volt wire and cable smaller than No. 8 shall be single-conductor copper with heat and moisture resistant thermoplastic insulation, THWN.

##### 4.3 Installation

- 4.3.1 Use lubricating compounds when pulling wires and cables into conduits. The compounds shall not be injurious to the conductors and shall not harden or

become adhesive. Provide slack in each wire run for contraction and expansion of the wires. Where several single conductor wires are trained through a box, manhole, or handhole, they shall be cabled together and supported. Do not bend wires so that insulation is injured.

4.3.2 Use cable grips or other devices to distribute the strain to the conductor, insulation, and jacket. Fish tapes, cable grips, and other devices used to pull wires shall have no sharp projections that will scratch or otherwise injure the interior of the raceway.

4.3.3 Control or instrumentation wiring shall not be run in the same conduit as 120, 208 or 480 volt branch circuit or feeder conductors.

#### 4.4 Splices

4.4.1 Materials used for splices shall be compatible with conductors, insulations, and protective jackets. Splices shall insulate and protect the conductors as much as the insulation and protective jackets of the individual wires and cables. In manholes, handholes, and other locations where moisture may be present, the splices shall be waterproof and suitable for submersion.

4.4.2 Splices in signal cables shall be nylon, self-insulated, crimp type for individual conductors, with an overall covering of plastic tape, heat shrinkable plastic sleeve, or poured epoxy, installed in accordance with the manufacturer's directions.

4.4.3 Splices for 600-volt wires No. 8 and smaller shall be indenture compression or screw-on compression type connectors rated 600-volt, 75C. Sizes shall be as recommended by the manufacturer of the connectors for the number and size of wires connected. Insulators shall be heavy duty, non-rigid plastic which will not break or crack when installed with pliers or compression tools and shall have skirts long enough to prevent flash-overs and to protect excessively stripped wires.

4.4.4 Screw-on compression connectors shall be non-restricted, expandable, zinc-coated, steel springs capable of holding conductors under constant compression along at least half of the spring length after mechanical and thermal stresses have been applied and released. Springs shall be contained so that the wires will not cut through the ends of the connectors and insulation. Install connectors with tools designed for the purpose. Waterproof spring compression connectors with epoxy connector sealing packs or with an alternate method approved by Engineer.

4.4.5 Splices for 600-volt wires No. 6 and larger shall be made with compression type copper sleeves with conductivity equal to that of the conductors and insulated with plastic tape, heat-shrinkable plastic sleeve, or other material approved by Engineer, equivalent to the wire insulation.

4.4.6 Insulating tape for 600-volt wires and for signal cables shall be vinyl plastic conforming to UL539H.

#### 4.5 Terminations

- 4.5.1 Provide terminal lugs on the ends of 600-V wires unless lugs are provided on the connected device, such as circuit breakers. Terminal lugs for wires No. 6 and smaller shall be solderless, compression type copper. Lugs for wires No. 4 and larger shall be color keyed, compression type copper, with insulating sealing collars. Sizes shall be as recommended by the manufacturer for the wire sizes terminated. Lugs used to connect wires to copper bus bars shall be 2-hole type for wires No. 4 and larger.
- 4.5.2 Terminal lugs which are fastened together, as on motors, transformers, and other apparatus, or when the space between studs is so small that the lugs can turn and touch each other, shall be insulated for a dielectric strength of 2-1/2 times the normal potential of the circuit.

#### 4.6 Identification of Conductors

- 4.6.1 Feeder, branch circuit, grounded, and grounding conductors shall be color coded. Coordinate with Owner for preferred color coding, in no preference is indicated the following shall be used:

	<u>120/240 Volts</u>	<u>277/480 Volts</u>
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Gray
Ground	Green	Green with tracer

- 4.6.2 Provide permanent self-sticking wire markers on each 600-volt wire and each conductor in signal or communications cable installed under this Division. Install markers at each termination and in enclosures, such as junction, outlet, and pull boxes, and on each spliced wire.

### 5. GROUNDING

- 5.1 Grounding and bonding shall be in accordance with Article 250 of the NEC and as indicated on Drawings. Insulated green grounding conductor shall be provided in all power distribution conduits.
- 5.2 Grounding conductors shall be copper and shall have 600-volt insulation unless otherwise specified or indicated. Grounding conductor sizes shall be not less than required by the NEC and shall be larger where indicated.
- 5.3 Ground rod type made electrodes shall be copper weld type rods, not less than 5/8-inch diameter and 10 feet long.
- 5.4 Grounding connections shall be made to concrete reinforcing steel and shall be supplemented by bonding to driven ground rods, the metal underground water pipe system, to an effectively grounded metal building frame and to the interior metal cold water piping system. A water piping system shall not be used as the sole grounding electrode because it may be isolated or insulated.

- 5.5 Provide made electrodes outside of structures. Electrodes installed in multiple to form a grounding field shall be at least 20 feet apart. Install grounding conductors outside of structures 3 feet below grade. Connections to made electrodes or to building structure steel shall be thermite welded. Wrap thermite welded connections with 4 layers of electrical tape and overlap the conductor insulation at least 4 inches. Grounding conductor connections to piping systems, ductwork, or other equipment shall be made with grounding connectors and shall be accessible for inspection and maintenance. Metal conduits carrying grounding conductors shall be bonded to the conductors.
- 5.6 Provide a minimum of 20-feet of either bare copper #4 wire or 1/2" conductive steel reinforcing steel encased within concrete footing and connected as part of grounding electrode system per NEC 250-81(C).
- 5.8 Before grounding systems are placed in regular service, measure the resistance to ground of each made electrode. Make the measurements in the presence of Engineer and submit copies of the results. If the resistance to ground of any made or building grounding electrode exceeds 10 ohms, install additional made electrodes as required to reduce the resistance to less than 10 ohms.

## 6. ELECTRICAL CONTROL EQUIPMENT

### 6.1 Safety Switches

- 6.1.1 Safety switches shall conform to UL98 and shall be heavy duty type, 600-volt, 3-phase, unless otherwise indicated. Class RK-5, dual element, time delay, fuses (Bussman Fusetrons) shall be provided in fused switches. Provide rejection kits in each safety switch which reject all type fuses except Class R.
- 6.1.2 Safety switches shall be installed in enclosures with external operating handles equipped for locking in the "off" position and with cover interlocks so that the door cannot be opened when the switch is on.
- 6.1.3 Enclosures for safety switches exposed to the weather shall be NEMA 4, cast or stainless steel. Other switches shall have NEMA 12 enclosures.
- 6.1.4 Safety switches shall be Square D, Siemens, Cutler-Hammer/ Westinghouse, General Electric, or equal and shall be UL listed.
- 6.1.5 Provide equipment ground lug in each safety switch.
- 6.1.6 Provide engraved nameplate on each safety switch.

### 6.2 Circuit Protective Devices

- 6.2.1 Circuit protective devices shall have number of poles and voltage rating as required and as shown on the Drawings.
- 6.2.2 Circuit protective devices for feeder and branch circuit conductors shall be manually-operated, molded case, thermal-magnetic, circuit breakers with trip ratings as shown. Circuit breakers shall be common trip and have single operating handles of molded insulating material with indicators showing "On," "Tripped," and "Off" positions. Circuit breakers shall not be smaller than 100-

amp frame and shall have interchangeable trip units when larger than 225-amp frame.

6.2.2.1 Circuit breakers shall have a UL listed interrupting rating at voltage shown on Drawings.

6.2.3 Individually mounted circuit protective devices shall be installed in enclosures with external operating handles with provisions for locking in the "off" position and cover interlocks so that the door cannot be opened when the circuit protective device is on. Enclosures exposed to the weather shall be NEMA 4, cast or stainless steel. Flush mounted enclosures shall be NEMA 1B. Other enclosures shall be NEMA 12.

6.2.4 Circuit protective devices shall be Square D, Siemens, General Electric, Cutler-Hammer/Westinghouse or equal.

#### 6.4 Manual Motor Starting Switches

Manual motor starting switches with melting alloy type thermal overload protection shall be provided for single- phase motors when integral overload protection is not provided with the motor. Enclosures for switches exposed to the weather, including those installed flush with the outside surface of exterior walls, shall be NEMA 4 stainless steel. Other enclosures shall be NEMA 12.

#### 6.5 Control Stations

6.5.1 Control station pushbuttons, selector switches, indicating lights, and other devices shall be heavy duty, oil-tight type. Enclosures for control stations exposed to the weather, including those installed flush with the outside surface of exterior walls, shall be NEMA 4 stainless steel. Other enclosures shall be NEMA 12.

6.5.2 Indicating lights shall have built-in transformers and 6-volt, miniature, bayonet base incandescent lamps, and shall be push-to-test type. Lenses for motor running lights shall be green and for other functions as indicated or selected by Engineer. Pushbutton colors shall be red for stop, black for start, and as selected by Engineer for other functions. Legend plates shall be provided on oil-tight units. Contact blocks shall contain not less than one SPDT contact.

### 7. ELECTRICAL DISTRIBUTION EQUIPMENT

#### 7.1 Panelboards

7.1.1 Panelboards shall conform to UL67, Type 1, Class 1 and shall be factory-assembled, dead front type with copper bus, lugs, finish trim and bolt-on, thermal- magnetic molded case circuit breakers of frame and trip ratings shown on Drawings. Panelboards shall utilize bolt-on breakers with a minimum cabinet width of 20 inches. Provide NEMA 12 enclosures.

7.1.2 Circuit breakers shall conform to UL 489.

7.1.3 Provide multi-terminal ground bus in each panel.

- 7.1.4 For each panelboard, provide typewritten directory card listing location and circuit controlled. Insert with plastic cover into directory frame on door. Provide lamicaid black nameplates with 3/8" letters (white) for each branch circuit in distribution panels and for lighting and distribution panels indicating panel I.D. secured to cover using two sheet metal screws.
- 7.1.5 Panelboards shall be as indicated on the Drawings as manufactured by Square D, Siemens, General Electric, or Cutler-Hammer/ Westinghouse.
- 7.1.6 Provide single door with spring loaded lock. Key panel locks alike.

ELECTRICAL  
SECTION 16C  
DRY TYPE TRANSFORMERS

1. GENERAL

- 1.1 Furnish and install the dry type transformers at locations as shown on the Contract Drawings and as specified herein.

2. QUALITY ASSURANCE

- 2.1 Comply with applicable portions of NEMA Standard Publication No. ST 20-2014 pertaining to dry-type transformers.

3. SUBMITTALS

- 3.1 Submit manufacturer's data including rated KVA, frequency, primary and secondary voltages, percent taps, impedance, efficiency, average temperature rise above 40 degrees C ambient, and sound level in decibels.

4. PRODUCTS

- 4.1 Provide products of one of the following:
1. Cutler Hammer
  2. General Electric
  3. Hevi-Duty Electric
  4. Sorgel Electric

5. GENERAL DESCRIPTION

- 5.1 Provide factory-assembled, general-purpose, air-cooled, dry-type distribution transformers of rated capacities indicated, 60 hertz, 10 kV BIL. Primary winding shall have two 2-1/2 % taps above and below rated voltage.
- 5.2 Unless indicated otherwise on drawings, voltage ratio shall be 480 volts delta to 208/120 volts wye.
- 5.3 Transformer surface temperature rise shall be limited to a maximum of 65 degrees C. Terminal compartment temperature shall be limited to 75 degrees C when transformer is operating continuously at rated load with ambient temperature of 40 degrees C. Sound level ratings shall not exceed 45 dB.
- 5.4 Transformers shall be provided with fully enclosed sheet steel enclosures that are electrically grounded to transformer enclosure by means of flexible grounding strap.
- 5.5 Provide transformers with 150 degrees C rise insulation system and suitable for mounting on floor or suspending from structure.

## 6. INSTALLATION

- 6.1 Install units on external vibration isolation supports complying with manufacturer's installation instructions.
- 6.2 Where indicated on drawings, transformers shall be installed in motor control centers.

## 7. GROUNDING

- 7.1 Provide equipment-grounding connections for power distribution transformers.
- 7.2 Ground neutral on secondary side of each delta-wye connected transformer to building steel and metal cold water pipe.

## 8. TESTING

- 8.1 Upon completion of installation of transformers, energize primary circuitry at rated voltage and frequency from normal power source and test transformers. Test shall include output voltage and audible sound levels. Correct or replace malfunctioning units and retest.

## ELECTRICAL

### SECTION 16D

#### VARIABLE FREQUENCY DRIVE CONTROLLERS

##### 1. GENERAL

- 1.1 Furnish and install the variable frequency drive controllers at locations as shown on the Contract Drawings and as specified herein.
- 1.2 The manufacturer of the variable frequency drive shall be a certified ISO 9001 facility.
- 1.3 The drive and all associated optional equipment shall be UL listed according to the Power Conversion Equipment UL 508C. A UL label shall be attached inside each enclosure.
- 1.4 The drive shall be designed, constructed, and tested in accordance with NEMA, NECX, VDE, IED standards and CSA certified.
- 1.5 Each drive shall be tested with a 100 percent loaded motor in an environmental chamber at 104 degrees C. All door mounted pilot devices shall be tested and the drive shall be submitted to a hi-pot test. Documentation of the success of these tests shall be provided upon request of Engineer or Owner.

##### 2. SUBMITTALS

- 2.1 Submit manufacturer's data on variable frequency drive controllers including power and control wiring diagrams, dimensioned enclosure drawings, voltage and current ratings, and horsepower ratings.
- 2.2 Submit maintenance and operation manuals with recommended replacement parts lists.

##### 3. PRODUCTS

- 3.1 Subject to compliance with requirements, provide variable frequency drive controllers ACQ580-01-065A-4 as manufactured by ABB or engineer approved equal.

##### 4. GENERAL DESCRIPTION

- 4.1 The variable frequency drive controller shall convert the input AC power to adjustable frequency and voltage. Control technique shall be by pulse width modulation.
- 4.2 The input power section shall use a full wave bridge rectifier and shall be insensitive to AC line phase rotation.
- 4.3 The output power section shall use insulated gate bipolar transistors or intelligent power diodes as required by the characteristics of the motor.
- 4.4 The variable frequency drive shall be suitable for the operation of the sizes and types of motors as indicated on the drawings.
- 4.5 The variable frequency drive shall include a mechanically and electrically interlocked isolation and bypass contactors complete with Class 20 thermal overload relay, circuit breaker disconnect, control circuit transformer, AFC/OFF/BYPASS switch and TEST/NORMAL selector switch.

4.6 The variable frequency drive shall be capable of accepting signals from a SCADA system.

## 5. CONSTRUCTION

5.1 The variable frequency drive shall be provided with an external operated, lockable disconnect switch.

5.2 The variable frequency drive shall be in a self-contained UL (NEMA) Type 1 enclosure for independent wall mounting.

## 6. RATINGS

6.1 The variable frequency drive shall operate in a pollution Degree 3 environment with a temperature range of 0 to 40 degrees C and a relative humidity of 95 percent, non-condensing.

6.2 The input voltage shall be as indicated on drawings, plus or minus 15 percent, at 47.5 to 63 Hertz.

6.3 The drive efficiency shall be not less than 96 percent at full speed and load.

6.4 The drive shall be listed for use at an available fault current of 65,000 amps symmetrical, or greater if so indicated on drawings.

## 7. PROTECTION

7.1 Upon power-up the drive shall automatically test for valid operation of memory, option module, loss of analog reference input, loss of communication, dynamic brake failure, DC-to-DC power supply, control power, and the precharge circuit.

7.2 The variable frequency drive shall be fully protected against transient voltages with integral transient voltage surge suppressors.

## 8. EXECUTION

8.1 The variable frequency drive manufacturer shall field test, adjust, and certify all drives for satisfactory operation.

8.2 Coordinate with all equipment control diagrams and approved vendor drawings to insure that all control and pilot devices are present and operational.

8.3 Verify that motor to be driven is NEMA MG1 Part 31 compliant. Provide integral line reactors if the motor is not compliant.

8.4 All variable frequency drives shall be tested and initially energized by a manufacturer's representative for proper operation within the requirements as defined by control drawings and approved vendor drawings of associated equipment.

TABLE OF CONTENTS  
FOR  
DIVISION 22  
PUMPS AND DRIVES

<u>SECTION</u>		<u>PAGE</u>
22A	GENERAL PUMP REQUIREMENTS	1-2
22B	SUBMERSIBLE PUMPS	1-6
22C	PUMP CONTROLLER	1-15

## PUMPS AND DRIVES

### SECTION 22A

#### GENERAL PUMP REQUIREMENTS

##### 1. GENERAL

- 1.1 Furnish and install the pumps, drives and related accessories required for this project, unless specified under other sections.
- 1.2 See Section 1E for other requirements relating to furnishing and installing equipment items.
- 1.3 To reduce maintenance expense, pumps of the same type shall be supplied by the same manufacturer insofar as possible.

##### 2. TESTS

- 2.1 Furnish six copies of certified curves, based on pumping clear water, showing the capacity, efficiency and brake horsepower for each pump furnished, and for maximum and minimum speeds where applicable. Curves shall be derived from shop tests performed by the manufacturer in accordance with the standards of the hydraulic institute.
- 2.2 After installation, conduct field tests to demonstrate that capacities and operating characteristics specified are developed.
- 2.3 Each motor shall be given a routine test at the factory to assure conformance to design standards and limits, and freedom from mechanical and electrical defects.

##### 3. SUBMITTALS

- 3.1 Shop drawings shall be submitted in accordance with Section 1C.
- 3.2 Shop drawings shall include details and assembly plans, including parts lists and complete material specifications for each type and size of pump furnished.
- 3.3 Shop drawings for motors submitted for approval shall include the following motor data:
  1. Pump Performance Curves.
  2. Pump Outline Drawing.
  3. Station Drawing for Accessories.
  4. Electrical Motor Data.
  5. Typical Installation Guides.
  6. Technical Manuals and Parts List.
  8. Printed Warranty.
  9. Management system certificate ISO 9001.
  10. Manufacturer's Equipment Storage Recommendations.
  11. Manufacturer's Standard Recommended Start-Up Report Form.

##### 4. NAMEPLATES

- 4.1 Brass or stainless steel nameplates shall be attached to each pump stamped with the manufacturer's name, capacity, head in feet, rpm, and identification number.

##### 7. MOTORS

- 7.1 Pump motors shall be non-overloading throughout its entire performance curve, from shut-off to run-out.

8. PUMP SCHEDULE

8.1 The pumps to be provided under this Division shall be as follows:

1. Raw Sewage Pumps

Type – Centrifugal Submersible

Quantity – Two (2)

Operating Condition – 510 gpm @ 167 ft. TDH @ 50.0% hydraulic efficiency

Motor - 45 HP, 480V

Representative Model No. – Flygt NP 3202-467 imp

## PUMPS AND DRIVES

### SECTION 22B

#### SUBMERSIBLE PUMPS

##### 1. GENERAL

- 1.1 Furnish and install submersible pumps as indicated on the drawings. The contractor shall supply and install three (3) submersible sewage pumps with discharge connections, discharge pipes, guide bars, cable holder lifting chains. Each pump shall be heavy-duty non-clog submersible furnished with hypalon-jacketed type SPC cable P-MSHA approved and sized according to N.E.C. and ICEA Standards. The submersible pumps shall have a semi open multi vane self-cleaning impeller designed to transport wastewater with fibrous materials like wet wipes.

Each pump shall be capable to lift 510 US gpm at a total dynamic head of 167 feet. The hydraulic efficiency in this duty point shall be not less than 50% and approved according HI 11.6:2012 Grade 2B. The hydraulic of the pump shall be capable of handling raw domestic wastewater and storm water with fibrous materials like wet wipes.

- 1.2 See Section 1F for other requirements relating to furnishing and installing equipment items.
- 1.3 Submit shop drawings and equipment data as specified in Section 1C.
- 1.4 All components described in this section shall be supplied by the pump manufacturer.
- 1.5 Pumps shall be as manufactured by Xylem Flygt Corporation, or approved equal.
- 1.6 The pump shall be capable to operate without any limitation between 50% and 125% of the Best efficiency point (B.E.P) of the performance curve.
- 1.7 The required shaft power (P2) in the guaranteed duty point shall be less than 45 HP. A performance chart shall be provided upon request showing curves for torque, current, power factor, input/output HP and efficiency. This chart shall also include data on starting and no-load characteristics.

##### 2. PUMP

- 2.1 The pump shall be supplied with a mating cast iron 6-inch discharge connection with performance as noted in Section 22A. The pump(s) shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet-well. 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. Pump shall be fitted with a wide bale lifting handle suitable for grapple snagging from an overhead hoist and lifting hook. A 304 stainless steel lifting chain shall be provided with working capacity 1.5 x the pump weight.
- 2.2 Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be of stainless steel construction. All metal surfaces coming into contact with the sewage, 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.

- 2.3 Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the 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.
- 2.4 Each unit shall be provided with an integral motor cooling system. A stainless steel motor cooling jacket shall encircle the stator housing, providing for dissipation of motor heat regardless of the type of pump installation. An impeller, integral to the cooling system and driven by the pump shaft, shall provide the necessary circulation of the cooling liquid through the jacket. The cooling liquid shall pass about the stator housing in the closed loop system in turbulent flow providing for superior heat transfer. The cooling system shall have one fill port and one drain port integral to the cooling jacket. The cooling system shall provide for continuous pump operation in liquid or ambient temperatures of up to 104°F (40°C). Operational restrictions at temperatures below 104°F are not acceptable. Fans, blowers or auxiliary cooling systems that are mounted external to the pump motor are not acceptable.
- 2.5 The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered equal.
- 2.6 The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated and have a nominal L10 lifetime of 50,000 hours. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two-row angular contact bearing to compensate for axial thrust and radial forces. Single row lower bearings are not acceptable. The upper bearing shall be insulated for VFD operation.
- 2.7 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 contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide seal ring. 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. Any leakage passing the sealing shall not pass the bearings. Before it reaches the bearings the liquid shall create an alarm via the floating leakage sensor.

- 2.8 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. Seal lubricant shall be non-hazardous.
- 2.9 Where a seal cavity is present in the seal chamber, the area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove. This groove shall protect the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.
- 2.10 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.
- 2.11 The pump and motor shaft shall be a single piece unit. The pump shaft is an extension of the motor shaft. Shafts using mechanical couplings shall not be acceptable. The shaft shall be stainless steel – ASTM A479 S43100-T. Shaft sleeves will not be acceptable.
- 2.12 The impeller shall be of (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. The impeller blades shall be self-cleaning upon each rotation as they pass across a sharp relief groove in the insert ring and shall keep the impeller blades clear of debris. The clearance between the insert ring and the impeller leading edges shall be adjustable. The impeller shall be mounted on the motor shaft. Couplings shall not be accepted.
- 2.13 The pump volute shall be a single piece gray 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 volute insert ring containing spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide the relief path and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The internal volute bottom shall provide effective sealing between the multi-vane semi-open impeller and the volute. The insert ring shall be cast of (ASTM A-48 Class 35B cast iron or ASTM A 532 (Alloy III A), 25% chrome cast iron).

### 3. MOTOR

- 3.1 Each pump shall be equipped with a minimum 45 HP submersible electric motor, capable to operate on a 460 volt, 3 phases, 60 hertz voltage supply. 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. Each pump shall be fitted with minimum of 35 feet of stainless steel lifting chain or lifting cable. The working load of the lifting system shall be 50% greater than the pump unit weight.

- 3.2 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, connected in series, 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. Should the thermal switches open, the motor shall stop and activate an alarm. The stator windings shall be insulated with moisture resistant Class H insulation rated for 356°F. It shall be possible to lift and lower the pumps on parallel guide bars and connect them to wet well mounted discharge connection. There shall be no need for personal to enter the wet well when removing or reinstalling the pumps.

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.

- 3.3 The junction chamber containing the terminal board shall be hermetically sealed from the motor by an elastomeric compression seal. Connection between the cable conductors and stator leads shall be made with threaded compression type binding posts permanently affixed to a terminal board. The motor and the pump shall be produced by the same manufacturer.
- 3.4 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.
- 3.5 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.
- 3.6 The motor shall be protected by following sensors:
- 3 bi-metal Thermal switches for thermal control of the stator
  - 1 PT 100 thermal sensor (RTD) to monitor the stator temperature of 1 Winding
  - 1 PT 100 thermal sensor (RTD) to monitor the temperature of the main bearing
  - 1 Vibration sensor to monitor vibration on 3 axes from 10 – 600 Hz.

- 1 float switch in leakage chamber to monitor leakage in the leakage chamber.
  - 1 float switch in the terminal connection housing to monitor any leakage thru the cables and the cable entries.
- 3.7 The pump shall be supplied with a Pump electronic module (PEM) mounted inside the motor. The PEM shall collect, store and digitize all measurement from all sensors and shall communicate the data in a digital format via 2 control leads integral to the pump power cable to a Base unit mounted in a pump control cabinet to the Central control unit. The signals from the sensors shall be digital and transferred by just 2 leads within the motor cable. An additional pilot cable shall not be allowed. The PEM shall have information about the pump as well as features for startup and service support, such as:
- Pump serial number and other data plate information.
  - Specific configuration of monitoring functions for the actual pump such as alarm limits, delays, reset types, etc.
  - Counters by which the system can generate service reminders in accordance with the service policy specified in the pump manual.
  - Operating data and alarm history to analyze the condition of the pump and enable troubleshooting and reporting.
  - Accumulated running time and number of starts.
  - Pump duty rate (percentage of operation).
- 3.8 All castings must be blasted before coating. All wet surfaces are to be coated with two-pack oxyrane ester Duasolid 50. The total layer thickness should be at least 120 microns. Zink dust primer shall not be used.
- 3.9 The motor shall be equipped with 32 feet of screened cable suitable for submersible pump applications. The power cable shall be sized according to NEC and ICEA. 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.
4. SPARE PARTS---No Spare Parts are to be furnished.
5. PUMP TESTS
- 5.1 After installation, a pump station start-up shall be performed by the installing contractor under the supervision of the manufacture's authorized representative. 8 hours of field service shall be provided by an authorized, factory trained representative of the pump manufacturer. Services shall include, but not be limited to, inspection of the completed pump station installation to ensure that it has been performed in accordance with the manufacturer's instructions and recommendations, supervision of all field-testing and activation of the Pump Manufacturer's Warranty. The test shall demonstrate to the satisfaction of the Owner that the equipment meets all specified performance criteria, is properly installed and anchored, and operates smoothly without exceeding the full load amperage rating of the motor. The Contractor shall be responsible for coordinating the required field services with the Pump Manufacturer. Each completed and assembled

pump/motor unit shall undergo the following factory tests at the manufacturer's plant prior to shipment. The Manufacturer shall provide on demand a copy of his quality control plan for these tests and an ISO 9001 factory certificate:

- a. Minimum 3-point hydraulic performance test
- b. No-Leak seal integrity test
- c. Electrical integrity test

5.2 The pump manufacturer shall perform the following inspections and tests on each pump before shipment from factory:

1. Impeller, motor rating and electrical connections shall first be checked for compliance to the customer's purchase order.
2. A motor and cable insulation test for moisture content or insulation defects shall be made.
3. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
4. The pump shall be run submerged in water to minimum of six (6) feet.
5. After operational test No. 4, the insulation test (No. 2) is to be performed again.

5.3 A written report stating the foregoing steps have been done shall be supplied with each pump at the time of shipment.

All tests shall be performed in the presence of a duly authorized representative of the Owner. If the presence is waived, certified results shall be provided by the Contractor. Written notice of all tests shall be given two weeks in advance.

5.4 All test equipment shall be provided by the Contractor.

5.5 Training shall be a minimum of four (4) hours and cover the complete Pumping System and related controls. Instruction material shall be provided for four (4) trainees.

## PUMPS AND DRIVES

### SECTION 22C

#### PUMP CONTROLS

##### 1. GENERAL

- 1.1 Furnish and install a Microprocessor based, intelligent pump controller with pre-configured pump control logic and fault handling.
- 1.2 See Section 1F for other requirements relating to furnishing and installing equipment items.
- 1.3 Submit shop drawings and equipment data as specified in Section 1C.
- 1.4 Electrical work shall be in accordance with Section 16.
- 1.5 The Pump Control Equipment shall be built to incorporate the Xylem MultiTrode MultiSmart or approved equal.

##### 2. PUMP CONTROLLER

- 2.1 The pump controller shall provide user ready automatic control of pumps with an intuitive HMI interface. The pump controller shall contain pre-designed operational parameters that are selected and configured via the user interface (HMI). The minimum features available in the pump controller shall include:

The pump manufacturer shall supply a Control system designed to monitor and control his pumps. The Monitoring system shall be mounted in the cabinet and contain per pump 1 Base unit acting as a gateway between the Pump and the Central Monitoring and a Central Control Unit (CU). The CU shall be able to control up to 10 Pumps.

Each pump shall be connected by just 2 controls leads to the base unit (BU). The control leads shall be part of the Motor cable. An additional Pilot cable shall not be allowed.

The Base Unit (BU) shall be able to stop the pump if required via an interlocking relay and it shall provide connections for optional measuring modules such as a power meter and other I/O modules.

The central unit (CU) shall be provided for external access and information exchange with the monitoring system via one single point. The user should be able to connect to the CU via an RJ45 jack to Local PC point to point and Local area network.

A local operator panel shall be possible to connect to the CU via a separate RJ45 socket.

The CU shall have a functionality based on embedded web pages that can be used through a PC or operator panel that allows:

- A graphical user interface for configuration and analysis via computer and HMI
- Pump status overview
- Alarm management
- Analysis through trend graphs and histograms.
- External communication with any SCADA via Modbus RTU or Modbus TCP

The CU shall contain the same pump data and logged data stored in each pump electronic module for quick access and redundancy.

The Cabinet shall be equipped with HMI Touch panel for access and interaction with the Monitoring and Control system. The panel should be at least 15 inches in size and able to show color.

When a pump related alarm is generated, the system shall support the user in the form of:

- Measurement data linked to the specific alarm item for analysis.
- Text information about possible root cause errors.
- Remedial actions.

2.1.1 Pump control of up to 6 pumps, including pump grouping and alternation.

2.1.2 Intelligent Hand-Off-Auto Control:

1. Hand mode (semi-automatic, non-maintained manual mode), the pump switches off at the deactivation set point and then resets to Auto mode for the next pump run cycle.
2. Hand mode (fully manual, maintained mode). To pump beyond the off (deactivation) set point, the Hand-Off-Auto button must be held down by the user for failsafe control.

2.1.3 Level set point adjustment for pump activation, deactivation and station level alarms..

2.1.4 Level device input capability shall include: 4-20mA analog signal, conductive probe or floats.

2.1.5 Redundant level device input capability with automatic input fault control (input device switching).

2.1.6 Selectable charge (fill) or discharge (empty) modes.

2.1.7 Station optimization including:

1. Maximum pumps to run
2. Maximum starts per hour
3. Maximum pump run time
4. Pump maintenance run function
5. Blocked pump detection
6. Well mixer control capability
7. Well clean out control capability
8. High inflow mitigation
9. Function to minimize buildup of fat or grease deposits

2.1.8 "Locked level" alarm function to indicate a level device fault.

1. User-defined % change within a specified time period
2. Different set point values for low use or high use time periods (user defined)

2.1.9 Pump alternation modes:

1. Standard alternation of pumps
2. Fixed sequence pump control
3. User defined alternation using a (N:1) or (N:M) ratio
4. Alternation based on the most efficient pump
5. Alternation by the number of hours run
6. Alternation by the number of starts within a specified time period

2.1.10 Pump decommissioning:

1. Decommissioned pump is automatically removed from the pump controller.
2. Internal remote monitoring data tag shall flag the decommissioned status of a pump

2.1.11 Up to (6) unique user defined profiles of set points shall be available to control pumps during specific site conditions or events. Features shall include:

1. Automatic profile change based on date and time
2. Profile selection option from SCADA (remote control), digital input, logic tag or local display HMI

2.1.12 Datalogger for user-defined faults and events:

1. 50,000 events to internal flash memory
2. 10,000,000 events by writing directly to an SD card or USB
3. FTP data transfer or download data capability of event and fault logs in the form of a (csv) file for Microsoft Excel analysis

2.1.13 3-phase supply voltage monitoring and supply fault management for the following conditions:

1. Under-voltage
2. Over-voltage
3. Phase fail
4. Phase rotation

2.1.14 Monitoring of dc power supply, battery voltage, and internal controller temperature

2.1.15 Energy, power and pump efficiency monitoring:

1. kW, kVA, power factor, kWhr, KVAH calculation for each pump
2. Pump efficiency calculation (gallons per kWhr) for each pump
3. Power supply data (voltage, frequency and phase angle information)

2.1.16 Motor protection features:

1. 3-phase current monitoring for each pump
2. Over current fault detection
3. Under current fault detection
4. Ground fault detection
5. Current phase imbalance fault
6. Motor insulation resistance failure detection

2.1.17 Flow measurement: Calculated flow via liquid level draw down data

1. Calculated flow by liquid level draw down method
2. Flow monitoring by inputs from a flow meter (analog input and pulsed signal input)
3. Flow alarms for pump(s) and total station flow

2.1.18 VFD speed control capability.

2.1.19 Fault module capability as follows:

1. Pump hold out function
2. Automatic restart function after fault condition is no longer present
3. Manual reset of fault required (if user intervention of fault reset is selected)

2.1.20 Remote control via remote telemetry monitoring to include the following:

1. Changing the mode of pumps (hand/off/auto)
2. Reset of pump faults and station faults
3. Changing pump and alarm setpoints
4. Changing operational profiles

2.1.21 Security

1. User defined password management for access to programming areas in the controller
2. Automatic data logging of personnel who have entered the programming areas
3. Automatic logging of all unsuccessful login attempts with a date and time stamp
4. Digital input option for controlled access to programming areas

2.1.22 SD/USB ports shall be available for the following operations:

1. Firmware upgrades
2. Save and load pump controller configuration
3. Download data logs
4. Export or import Modbus and DNP3 points list

3. ADVANCED PROGRAMMING FUNCTIONS

3.1 The pump controller shall have the option of interfacing with IEC61131-3 and IEC61499 compliant PLC programming languages to enhance functionality or interact with the pump controller.

3.2 The pump controller shall have the option of using a simple logic engine to enhance functionality or interact with the pump controller.

4. INPUT/OUTPUT CHARACTERISTICS

4.1 The pump controller inputs and outputs shall be modular and shall be expandable.

4.2 Available I/O types shall include:

- A. Digital inputs (voltage free input), also configurable as counters
- B. Digital outputs (240V, 5A resistive)
- C. Analog inputs (10bit)

- D. Analog outputs (10bit)
- 4.3 User defined digital inputs
  - Digital Inputs shall be configurable based on specific pump sensor arrangements:
  - A. Seal sensor (conductive)
  - B. PTC Thermistor
  - C. Flygt FLS & CLS
  - D. Conductive probe (for liquid level sensing)
- 4.4 Dedicated pump monitoring inputs
  - The pump controller shall provide support for the following pump monitoring inputs:
  - A. Insulation resistance test (IRT) with user selectable test voltage up to 1000VDC
  - B. 3-phase current monitoring, derived from external current transformer devices with a 0.5% input resolution tolerance
  - C. 3-phase supply voltage monitoring at 0.5% input resolution tolerance. Up to 630VAC maximum voltage (phase to phase).
- 4.5 Pressure Transducer Support
  - The pump controller shall have an internal atmospheric pressure sensor to allow for atmospheric pressure sensing and signal correction when used in conjunction with the pressure transducer level sensing device.
- 5. USER INTERFACE
  - The pump controller shall include a graphical user interface (HMI) display for configuration settings, control operations, and advanced programming. The following display characteristics shall be provided:
  - 5.1 Status indication
    - The following parameters shall be displayed on the main screen:
    - A. Liquid level in percentage, meters, feet or other custom defined units
    - B. Set points for pump control and alarms
    - C. Pump status (running or stopped)
    - D. Pump availability
    - E. Pump fault indication
    - F. 3-phase voltage supply values
    - G. Date and time indication
    - H. User configurable options to display pump information and station status
  - 5.2 Information screens
    - The following parameters shall be available via a user key press from the main screen:
    - A. Hours Run accumulators for each pump and the pump station with the following information:
      - 1. minutes run for last pump cycle
      - 2. total minutes (hourly)

3. total hours today, total hours yesterday
  4. total hours this week, total hours last week
  5. total accumulated hours
- B. Pump Start accumulators for each pump & the station with the following comparisons
1. pump starts this hour, pump starts last hour
  2. pump starts today, pump starts yesterday
  3. pump starts this week, pump starts last week
  4. total accumulated pump starts
- C. Flow values
1. station inflow rate
  2. pump flow rate
  3. total station volume
  4. overflow data (including overflow start time, duration, estimated volume)
- D. Power and Efficiency
1. pump efficiency in gallons or litres per KWHr - or KVAh
  2. power in kW, KVA
  3. power factor
  4. energy accumulators per pump in KWHr and KVAH
- E. Insulation resistance value for each pump motor in (Ohms)
- F. I/O Status
1. Digital I/O status and accumulated values
  2. Analog I/O status and values in (mA) or scaled values
  3. 3-phase voltage, current, frequency, phase angle, power factor
- G. Database viewer to review all statistics, data information and available tags in real time
- H. Communications information and statistics
- 5.3 Control Functions
- The pump controller display interface shall be capable of performing the following control operations:
- A. Pump control mode for each pump (Hand-Off-Auto)
  - B. Pump fault reset
  - C. Level alarm reset
- 5.4 Fault screen
- 5.4.1 The main screen shall include a Fault button which takes the user to a Fault screen and allows them to check all current and unacknowledged alarms.
- 5.4.2 The fault screen will provide fault details along with a date and time stamp for each fault occurrence.

5.4.3 A fault reset option shall be presented to the user when alarms can be acknowledged or reset.

## 5.5 History screen

The main screen shall include a History button which takes the user to a History screen which allows them to view the following information:

- A. Viewing of all faults and events
- B. Information filtering capability

## 5.6 Configuration screens

The user configuration screens shall provide capability to change pump control settings as follows:

1. Set point programming of pump activation values and level alarm values
2. Enable/Disable level alarms, faults and historical data recording
3. Configuration of Inputs and Outputs
4. Setup parameters for each type of fault available in the pump controller
5. Set alternation mode for pumps
6. Configure station optimization parameters
7. Configure voltage supply monitoring parameters
8. Configure motor monitoring parameters
9. Configure communications parameters
10. Configure data logging parameters
11. Enable level simulation session
12. Create or restore backup copies of the pump controller configuration settings
13. Restart the pump controller

### 5.6.1 The Hardware shall have following features:

1. The pump controller inputs and outputs shall be modular and shall be expandable.
2. Available I/O types shall include:
  - a. Digital Inputs (discrete, voltage free input)
  - b. Digital Outputs (dry contact type, rated at 240VAC/DC, 5A resistive)
  - c. Analog Inputs (10bit)
  - d. Analog Outputs (10bit)
3. Digital Inputs shall be configurable based on specific input requirements as follows:
  - a. Pump sensor inputs: Flygt FLS circuit, Conductive Seal, PTC Thermistor (overtemp)
  - b. Conductive probe sensing (for liquid level monitoring)
  - c. (2) High speed counter inputs

## 5.7 Configuration program backup, restore and firmware upgrades

- 5.7.1 The pump controller configuration interface shall allow the user to save and restore pump controller configurations onto a portable SD card or USB storage device.
- 5.7.2 The pump controller shall allow for the import of DNP3 and Modbus point lists and custom logic scripts via the SD or USB ports.
- 5.7.3 The pump controller configuration interface shall allow the user to backup system log files, alarm and event log files, and custom scripts via the SD or USB ports.
- 5.7.4 Firmware upgrades shall be possible by using a firmware upgrade file on a portable SD card or USB storage device.

## 6. COMMUNICATIONS

### 6.1 Physical

The pump controller shall include the following data communication ports:

- A. Two Ethernet ports (10Mbit/s)
- B. Two RS232 ports (115kBit/s)
- C. Two RS485 ports (115kBit/s)
- D. USB device port
- E. SD card port

### 6.2 Communication Types

The pump controller shall support the following communication types:

- A. TCP/IP
- B. UDP
- C. RS232
- D. RS485
- E. Private radio over RS232
- F. PSTN
- G. Wireless LAN
- H. Cellular Communications

### 6.3 Communication Protocols

#### 6.3.1 DNP3 (master & slave, level 2 compliant), including:

- A. Change of state reporting
- B. Native date/time and quality stamps for each data point
- C. Event buffering for different classes of data
- D. Support for multiple masters and slaves to be configured on the unit
- E. DNP Security (for securing communications between master station and RTU)

#### 6.3.2 Modbus (master & slave) including:

- A. Modbus TCP
- B. Modbus RTU
- C. Modbus ASCII

D. Support for multiple masters and slaves

7. PERFORMANCE AND ENVIRONMENTAL CHARACTERISTICS

The pump controller shall meet the following performance and environmental characteristics:

A. Central Processing Unit Speed: 566MHz

B. Central Processing Unit RAM Size: 256MByte

C. Central Processing Unit Flash Memory Size: 64MByte

D. Real Time Clock

E. Working temperature -10°C to +60°C

F. Storage temperature -40°C to +90°C

G. Humidity 5% to 95% (non-condensing)

H. IP Rating Controller Base Unit: IP20, Nema 1

Display Interface: IP65, Nema 4

8. WARRANTY

The pumps shall be provided with prorated 60 months (5 years) warranty against defects in materials and or workmanship. Unless otherwise specified, all other equipment shall be warrantied for 12 months (1 year). The warranty shall be in printed form and previously published as the manufacturer's standard warranty for all similar units manufactured, latest revision. Upon warranty occurrence, the manufacturer's authorized service center shall remove the pump, repair, reinstall and provide start up on the repaired pump. A detailed failure analysis shall be submitted to the Owner for their records summarizing corrective action taken.

The manufacturer shall guarantee clog-free operation for a period of 12 months from the date of start-up of the pumps by the local authorized factory representative. A certificate shall be provided to the Owner on the day of start up with the local contact information and effective date. If the impeller clogs with typical solids or modern trash debris normally found in domestic wastewater during this period, an authorized representative shall travel to the jobsite, remove the pump, clear the obstruction and reinstall the pump at no cost for the Owner. A written report shall be provided to the Owner detailing the service call with pictures for verification purposes.

9. PUMP CONTROL FEATURES

9.1 Nema 4 oil tight Hand Off Automatic pump switches.

9.2 Nema 4 oil tight push to test pilot run, failure and level indicators.

9.3 Elapse time meters for each pump.

9.4 Alternation w/ automatic and manual selectors.

9.5 Phase Monitor 12-pin two double pole, double throw contacts plug-in w/ time delay.

9.6 Wire numbers through-out the Pump Control Center.

9.7 All alarms will be provided with dry contacts for remote monitoring.

9.8 All components shall have identification tags.

9.9 Seal leakage sensors – inputs and alarms.

- 9.10 Motor over-temperature sensor and alarms.
- 9.11 Alarm light on cabinet top and horn.
- 9.12 The Pump Control Center shall meet the requirements as outlined by UL508.
- 10. MINI-CAS
- 10.1 One plug in solid state Mini-CAS 120 unit shall be supplied for each pump to monitor the pump for over-temp and leakage. The unit shall have an 11pin, round base to mate with a standard 11 pin socket. The unit shall also be flanged in order to allow deadfront door mounting.
- 10.2 The unit shall be powered by 24VAC, 24VDC, or 120VAC. LED indication shall be provided for power on, over-temp, and leakage conditions. An over-temp reset push-button shall be provided to allow reset of the unit.
- 10.3 The sensor input circuitry is to contain both hardware and software filters to provide noise immunity, as well as sensor input short circuit protection. The Mini-CAS 120 unit shall be model 14-407129, as supplied by Flygt Corporation or approved equal.
- 11. ENCLOSURE
- 11.1 NEMA 4X - 304 Stainless
- 11.2 The enclosure shall be a NEMA 4X rated enclosure manufactured from 304 stainless steel. The enclosure shall be a minimum depth of 8" sized to adequately house all the components. The door gasket shall be foamed in place rubber composition and shall assure a positive weatherproof seal. The door shall open a minimum of 180 degrees. Devices mounted on the external surface of the enclosure shall maintain the NEMA rating of the enclosure.
- 11.3 A polished aluminum dead front shall be mounted on a continuous aircraft type hinge, shall contain cutouts for mounted equipment, and shall provide protection of personnel from live internal wiring. Cutouts for breaker handles shall be provided to allow operation of breakers without entering the compartment.
- 11.4 All control switches, indicator pilot lights, elapsed time meters, duplex receptacle and other operational devices shall be mounted on the external surface of the dead front. The dead front shall open a minimum of 150 degrees to allow access to equipment for maintenance. A 3/4" break shall be formed around the perimeter of the dead front to provide rigidity. Devices mounted on the external surface of the enclosure shall maintain the rating of the enclosure.
- 11.5 The back plate shall be manufactured of 12 gauge sheet steel and be finished with a primer coat and two [2] coats of baked on white enamel. All hardware mounted to the sub panel shall be accomplished with machine thread tapped holes. Sheet metal screws are not acceptable. All devices shall be permanently identified with engraved legends. All hardware mounted to the sub panel shall be accomplished with machine thread tapped holes. Sheet metal screws are not acceptable. All devices shall be permanently identified with engraved legends.

## 12. LEVEL SENSING EQUIPMENT

### 12.1 Description:

A Multi-Stage Level Sensing Device designed to detect liquid level at specified intervals in tanks or sumps and interface with an electronic controller for pump control and liquid level display. Back-up float type switches shall be provided and installed.

12.2 The Multi-Stage Level Sensing Device shall be PVC injected to seal the unit and prevent any moisture from entering any of the sensor units. Each sensor on the probe shall be rotated 90 degrees horizontally from the previous sensor along the probe length to eliminate tracking between sensors. Level sensing probes shall be pressure injected with an epoxy resin at final assembly to encapsulate all internal components and connections, thereby creating a rigid, sealed, homogeneous unit. Two wires shall be included within the length of the probe and shall be connected to each other at the bottom of the probe. When the wires are connected to the Pump station Controller, the connection shall provide fail-safe monitoring of the probe cable and the probe assembly. The flexible cable used for the Level Sensing Probe shall be comprised of PVC/PVC multi-conductor construction with a common oversheath that is water and oil resistant. The multi-conductor cable shall be identified with numbering and text along the entire length of the outer sheath at required intervals.

12.3 The Level transmitter shall measure the relative pressure with a ceramic diaphragm and be approved acc. EN 61000-6-2, EN 61000-6-3, EN 61326-1. It shall be insulated > 100 MΩ at 500 V DC and the sensor body shall be made of Ryton PPS.

12.4 All sensors installed in the sump shall be approved for explosive areas according UL Class 1, 2 and 3 Division 1 Group A-D T4/T5/T6

12.5 Cables shall be secured to the top of probe bodies by synthetic rubber compression fittings for strain relief. The cable shall be rated to physically support the combined weight of the sensor and long enough to reach to reach the cable connection box.

12.6 The mounting bracket shall be by stainless steel and include a wiper device that allows maintenance personnel to clean the level sensing probe when necessary.

### 12.7 Control panel construction and assembly

#### 12.7.1 General Requirements:

- a. The control panel shall be installed on a level which can't be flooded even by storm water.
- b. The control Panel shall be manufactured in accordance with ISO 9000-2001 specifications and shall be so constructed for the application of a UL Listing Label by an approved UL Control Panel Assembly Facility.
- c. All electrical connections shall be properly inspected and torqued in compliance with ISO specifications. External connections to the control panel shall be by way of numbered terminal blocks.
- d. Control Panels shall be properly checked and load tested with power applied. A control panel test log shall be supplied with the control panel.
- e. Control Panels shall be supplied from a UL approved control panel assembly facility with all of the required labels properly attached.

### 12.7.2 Control Panel Enclosure Environmental Rating

Control Panel Enclosure rating shall be specified in accordance with the project requirements or the contract drawings as either NEMA 3R, 12, 4 (Painted Steel) or 4X (Stainless Steel).

### 12.7.3 Control Panel Enclosure Requirements

- a. Enclosure shall be sized according to physical and functional device requirements.
- b. Enclosure seams shall be continuously welded and ground smooth.
- c. Enclosure door opening flange trough shall exclude liquids and contaminants.
- d. Enclosure shall include an integral body grounding stud and sub-panel mounting studs and be wall mounted, unless otherwise specified.
- e. Enclosure door shall have hidden hinges for a clean, aesthetic appearance.
- f. Enclosure door opening angle shall be standard, full access, 135 degree opening radius.
- g. Enclosure door shall be interchangeable and removable by pulling a hinge pin.
- h. Enclosure door shall have a high-impact thermoplastic data pocket mounted on the inner side of the enclosure door and shall have a seamless, foam-in-place, one-piece gasket to provide an oil-tight, dust-tight seal against contaminants.
- i. Enclosure shall have a three-point latching system with a zinc die-cast handle that is painted with black textured polyester powder paint.
- j. Enclosure handles shall be capable of being padlocked.
- k. Steel sub-panel shall be white.
- l. When enclosure cut-outs for instruments and other devices are required, holes shall be cut, punched, or drilled and finished with rounded edges.

### 12.7.4 Instrument Location Requirements

- a. Instruments or control devices designated for sub-panel (back) mounting shall be located in a manner that will allow for maintenance and adjustment.
- b. Instrument mounting height shall not exceed 6'-6" to the top of the instrument and shall not be lower than 3'-0" to the bottom of the instrument (unless otherwise specified).

### 12.7.5 Wiring Requirements:

- a. Wiring for AC and DC control circuits shall be Type SIS or Type MTW stranded copper and shall be sized for the applied voltage and current. Unless otherwise noted, control circuit wiring shall not be smaller than No. 16 AWG.
- b. Cable wiring for analog signal circuits shall be twisted, shielded pairs of stranded copper conductors that shall not be smaller than No. 20 AWG.
- c. Wiring for special signaling equipment such as communications, digital data, and multiplexed signals shall be provided by the equipment supplier.

- d. Wiring shall be numbered and marked at each termination point.
- e. Terminal blocks for internal or external wiring shall be DIN rail mounted with screw compression type terminals and machine printed labels.

#### 12.7.6 Nameplate Requirements

Nameplates are defined as inscribed, plastic plates mounted above or near a panel face mounted component. Unless otherwise noted, nameplates shall be engraved, rigid, laminated plastic with an adhesive back. Nameplate color shall be blue with white letters. Component Labels are defined as printed, vinyl labels mounted above, below or near a sub-panel (back) mounted component for identification. Printed vinyl labels shall be white in color with black letters and an adhesive back.

#### 12.7.7 Grounding:

Control Panel enclosure shall be properly grounded in accordance with the National Electrical Code and local code requirements. Each analog signal loop shall have a shield wire connected to ground at a single point for the loop. Shields shall be grounded at control panels where signals are input to the receiving device and not at the source of the transmitting device.

#### 12.7.8 Electrical Transient (Surge) Protection

All electrical and electronic components of the Control Panel shall be protected against damage due to electrical transients induced in interconnecting lines from lightning discharges and surges in nearby electrical systems. The transient surge protector shall be rated for 25kA per phase or larger.

#### 12.7.9 Circuit Breakers

Power Circuit Breakers shall be thermal magnetic type designed for AC current with a minimum interrupting capacity of 15,000 amperes. Control Circuit Breakers shall be in accordance with section UL 489 with a minimum interrupting capacity of 10,000 amperes.

#### 12.7.10 Control Power Transformers

Control Power Transformers required to provide control system and accessory power shall be machine tool type control transformers with epoxy encapsulated coils or resin impregnated coils, high quality silicon steel laminations, copper magnet wire, moulded terminals and 55° C rise (Class 10 insulation system).

#### 12.7.11 Supply Voltage/Phase Monitor

The voltage-phase monitor shall continually measure the voltage of each of the three phases of the incoming power to the equipment and provide protection for three phase motors and sensitive electronics. The phase monitor shall sense the following conditions: under- and over-voltage, voltage unbalance, phase loss and phase reversal.

#### 12.7.12 Control Relays

- a. Control relays shall be square base type with coil voltage (120VAC, 12VDC or 24VDC).
- b. Control relays shall be 4PDT (4 Pole, Double Throw) with normally closed/normally open contacts rated at 120VAC, 5 amps minimum.
- c. Control relays shall include an integrated test button and relay energized flag indicator.

#### 12.7.13 Full Voltage Magnetic Motor Controller:

- a. The motor controller shall be a NEMA rated, full voltage, non-reversing, across the line contactor and overload relay combination.
- b. The motor overload relay shall be an ambient compensated type with inverse-time-current characteristic and shall be provided with heaters or sensors in each phase matched to nameplate full load current of the specific motor to which it connects .

#### 12.7.14 GFCI Convenience Receptacle:

There shall be a 120VAC, 15 Amp GFCI rated convenience receptacle mounted on the dead front swing door of the control panel. Receptacle circuit shall be protected by a thermal magnetic circuit breaker.

#### 12.7.15 Enclosure Condensation Heater

- a. There shall be a 120VAC, 50 watt enclosure heater inside the control panel.
- b. The heater shall be a silicone rubber, insulated strip type enclosure heater.
- c. The heater shall be Chromalox Model #SL-B-2-5-55P, or approved equal.

#### 12.7.16 Local Alarm (Flashing Light):

There shall be a Flashing Alarm Light mounted on top of the control panel enclosure for local alarm indication. The flashing alarm light shall be supplied according to the following specifications:

- UL Recognized for use with UL NEMA Type 3R, 4, 4X, 12 & 13 Enclosures.
- Shatter Resistant Lexan globe, U.V. Stabilized and Flame Retardant.
- The Flashing Alarm Light shall be by Ingram Products, or approved equal.

#### 12.2 Construction:

- A. 316L stainless steel housing.
- B. Non-fouling Kynar (registered trademark) diaphragm.
- C. 4-20 mA, 0-5VDC, 0-10 VDC outputs
- D. Accuracy, (Total Error Band) 1% FS
- E. Compensated Temperature Range -10...80°C
- F. Environmental Protection: IP68
- G. Cable: Polyethylene

H. Integral lightning protection when properly grounded.

I. Supply voltage: 4-20 mA and 0-5 VDC output: 8- 28 VDC; 0-10VDC output: 13-28 VDC.

12.3 Supply with cable hanger and optional stabilizing weight

12.4 Number of Pressure Transmitters Required: Two (2). Contractor to install one and deliver one to owner for spare part.

12.5 Float Type Level Switches:

Provide and install float type level switches for back-up to the level transducer. Float switches shall be provided and wired to provide input to the controller for low level cut off, lead pump on-off, lag 1 on-off, lag 2 on-off, high level alarm.

12.5.1 Float Switches shall be Flygt Signal Duty Float Switch model ENM with mechanically activated switch. Flygt float switches have an internal weight and are housed in a chemical-resistant polypropylene casing. Unique boot with a locked compression fitting provides a secure yet flexible means of attaching the cable to the float. The three-wire single pole double throw (SPDT) switch can be wired normally open (NO) or normally closed (NC). Signal/control duty only.

12.5.2 Provide stainless steel hatch mounted hanger bracket suitable to secure and facilitate adjustment of all float switches.