

Plans and Specifications

for the

Springs Hill Special Utility District Blumberg Well No. 1

for

**Springs Hill SUD
P.O. Box 29
Seguin, Texas 78156**

(PWS #: TX0940022)

**Wilson County, Texas
July 2025**

The seal appearing on this document was authorized by Dennis Lozano, P.E. (Texas Serial # 106147) on the date indicated. Alteration of this sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.



Wet Rock Groundwater Services, L.L.C.

Groundwater Specialists

317 Ranch Road 620 South, Suite 303
Austin, Texas 78734 • Phone: 512-773-3226

www.wetrockgs.com

TBPG Firm No: 50038



ENGINEERING | CONSULTING | MANAGEMENT

(This Page Intentionally Left Blank.)

TABLE OF CONTENTS

Blumberg Well No. 1 - General Location Map

Blumberg Well No. 1 - Well Location Map

Blumberg Well No. 1 - Floodplain Map

Advertisement for Bid

Instruction to Bidders

Texas Sales and Use Tax Exemption Certificate

Bid Form

Bid Bond

Contractor Information

Statement of Bidder's Qualifications

Wage Decision

Contractor Agreement

Performance Bond

Payment Bond

Standard General Conditions

Technical Specifications:

Division 01 – General Requirements

Division 02 – Site Work

Division 03 – Concrete

Division 11 – Equipment

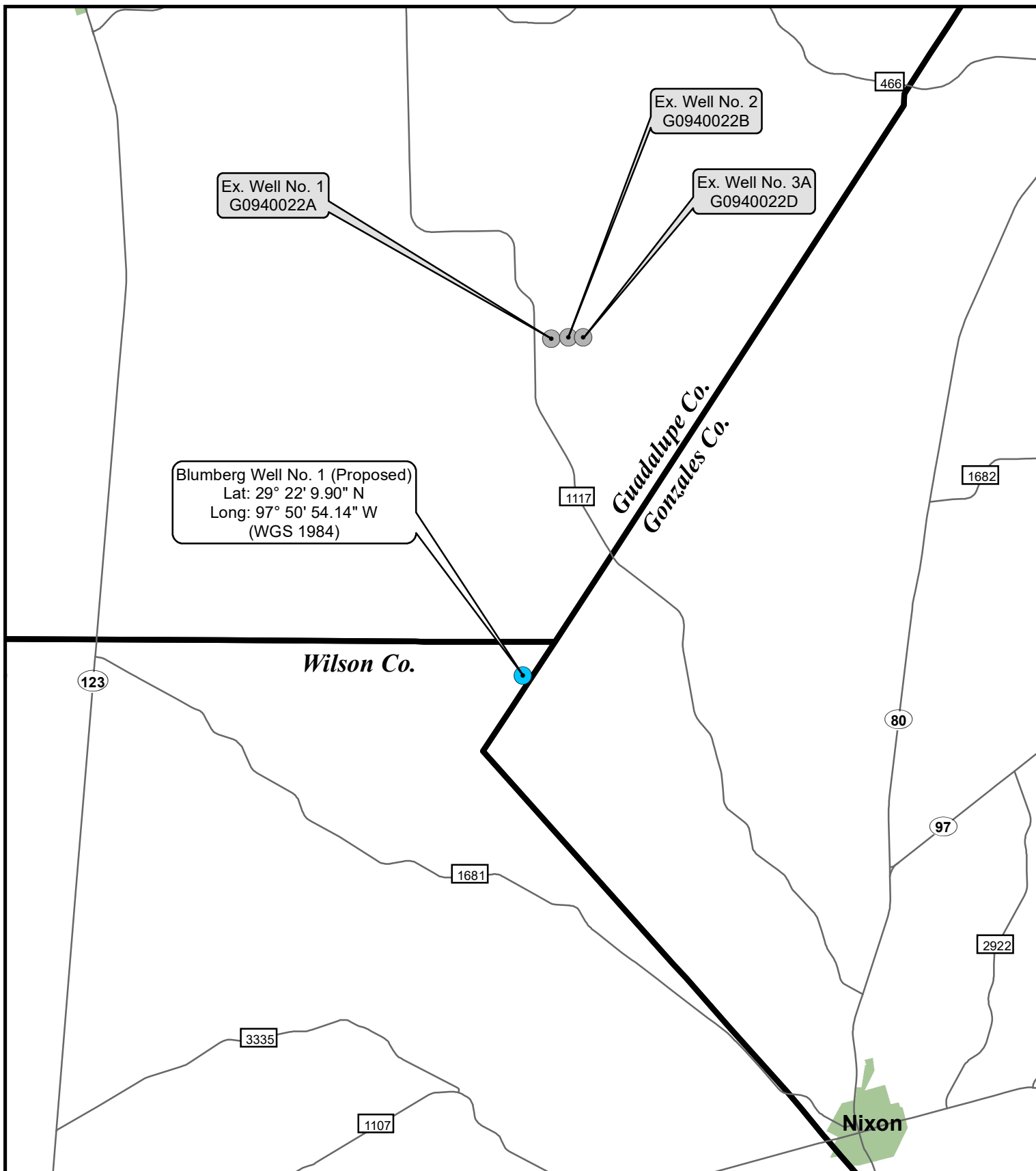
Division 15 – Mechanical

Construction Drawings

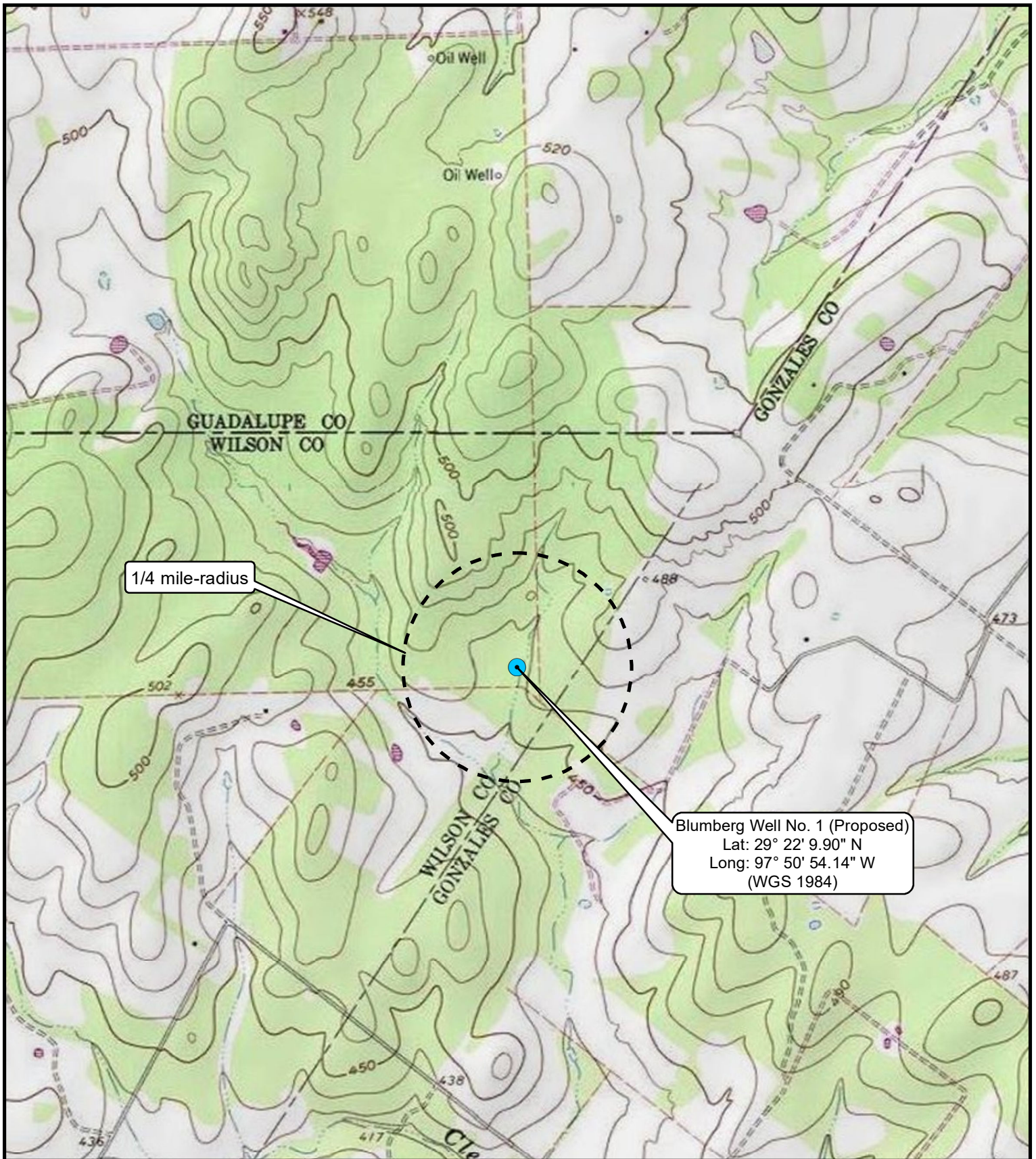
Sheet #

Description

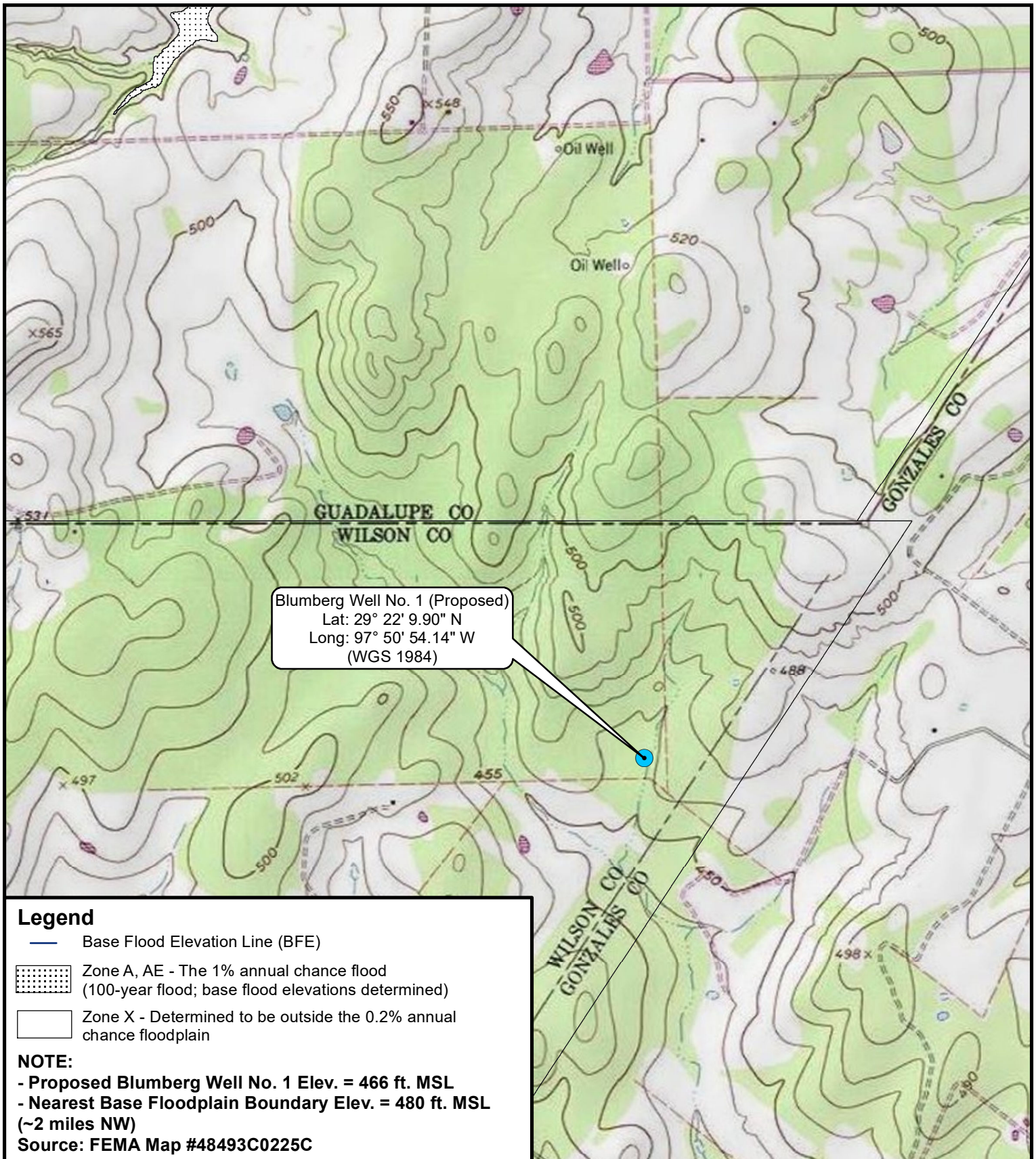
- | | |
|----|---|
| 1. | Cover: Blumberg Well No. 1 |
| 2. | General Notes: Blumberg Well No. 1 |
| 3. | Site Plan: Blumberg Well No. 1 |
| 4. | Well Profiles: Blumberg Well No. 1 |
| 5. | Well Details: Blumberg Well No. 1 |
| 6. | Fence Details: Blumberg Well No. 1 |



Scale: 0 1 2 Miles		Blumberg Well No. 1: General Location Map	
Drawn By: KK Date: 11-20-24			
Quad Name and No: Nixon, TX 29097-C7			
Projection: UTM NAD 83 Z 14			
		Springs Hill SUD PWS #TX0940022 Wilson County, Texas	



Scale: 0 750 1,500 Feet		Blumberg Well No. 1: Well Location Map	
Drawn By: KK Date: 11-20-24		Springs Hill SUD PWS #TX0940022 Wilson County, Texas	
Quad Name and No: Nixon, TX 29097-C7			
Projection: UTM NAD 83 Z 14			
		Wet Rock Groundwater Services, L.L.C. Groundwater Specialists TBPB Firm No: 50038 317 Ranch Road 620 South, Ste. 303 Austin, Texas 78734 Ph: 512.773.3226 www.wetrockgs.com	



Legend

- Base Flood Elevation Line (BFE)
- Zone A, AE - The 1% annual chance flood (100-year flood; base flood elevations determined)
- Zone X - Determined to be outside the 0.2% annual chance floodplain

NOTE:

- Proposed Blumberg Well No. 1 Elev. = 466 ft. MSL
- Nearest Base Floodplain Boundary Elev. = 480 ft. MSL (~2 miles NW)

Source: FEMA Map #48493C0225C

Scale: 0 750 1,500 Feet

Drawn By: KK Date: 11-20-24

Quad Name and No:
Nixon, TX 29097-C7

Projection: UTM NAD 83 Z 14



Blumberg Well No. 1: Floodplain Map

Springs Hill SUD

PWS #TX0940022

Wilson County, Texas



Wet Rock Groundwater Services, L.L.C.
Groundwater Specialists

TBPG Firm No: 50038

317 Ranch Road 620 South, Ste. 303
Austin, Texas 78734 Ph: 512.773.3226
www.wetrockgs.com

ADVERTISEMENT FOR BIDS

Separate sealed bids for the Springs Hill SUD Blumberg Well No. 1 will be received by and at the Springs Hill Water Supply Corporation Office, 5510 S. St. Hwy 123-Bypass, Seguin, TX 78155 until ____ AM on _____ 2025, where they will be publicly read aloud. Bids must be clearly marked on the outside of the envelope or package with the words "Springs Hill SUD Blumberg Well No. 1 Project". Bids received after this time will be rejected and returned unopened. Bid evaluations will be completed at a later time and date.

The Project generally consists of drilling and developing one Carrizo-Wilcox Aquifer well for the Springs Hill SUD:

Blumberg Well No. 1: The well shall consist of 702 feet of 16-inch steel casing pressure cemented to 700 feet, and 185 feet of 10-inch stainless steel pipe-based stainless-steel screen set within an 20-inch, underreamed gravel packed bore. The well shall be equipped with a 1,600 gpm, 300 H.P. oil lubricated vertical turbine lineshaft pump set with 550 feet of 10-inch steel column pipe.

A **MANDATORY** pre-bid meeting has been scheduled for _____ at ____ AM at the Springs Hill SUD office to allow for all bidders to ask questions and to see the project site and fully acquaint themselves with the existing conditions there and the restrictions attending the performance of the contract. Contractors will meet at the office and will then be taken to the project site. A sign-in sheet must be filled out at the Springs Hill SUD office to document attendance, and bids will not be accepted from Contractors who do not attend.

Each bidder shall also include the time when they can begin work and the number of days needed to complete the project as part of their bid. This may factor into the award of the project.

The information for Bidders, Bid, Bid Bond, Contract, Plans, Specifications, Performance and Payment Bonds and the Contract Documents may be examined at the following location:

Malone Wheeler, 5113 Southwest Parkway, Suite 260, Austin, Texas 78735. Phone: (512) 899-0601.

Plans and Specifications are available for download from the office of Malone Wheeler.: \$25.00 (Non-Refundable)

A bid bond in the amount of 5% of the bid issued by an acceptable surety registered with the U.S. Treasury shall be submitted with each bid. A certified check payable to Springs Hill SUD may be submitted in lieu of the Bid Bond.

Springs Hill SUD reserves the right to reject any and all bids and waive any informalities in the bidding. Bids may be held by Springs Hill SUD for a period not to exceed sixty (60) days from the date of the bid opening for the purpose of reviewing the bids and investigating the bidder's qualifications prior to the contract award.

INSTRUCTION TO BIDDERS

1. OPENING OF BIDS

Sealed bids shall be received by and at the Springs Hill SUD Office, 5510 S. St. Hwy 123-Bypass, Seguin, TX 78155 at the time specified in the Advertisement for Bids and then opened in the office. The ENGINEER shall at the time and place fixed for the opening of bids, cause each bid to be publicly opened and read aloud, irrespective of any irregularities therein. Bidders and other interested individuals may be present.

2. USE OF SEPARATE BID FORMS

These contract documents include a complete set of bid and contract forms which are for the convenience of the bidders and are not to be detached from the contract document, completed or executed.

3. INTERPRETATIONS OR ADDENDA

No oral interpretations will be made to any bidder.

Each request for an interpretation shall be made in writing to:

Malone Wheeler.

To be given consideration, each request must be received at least seven (7) days prior to the date fixed for the opening of bids. Any and all interpretations and any supplemental instruction will be in the form of written addenda to the specification or plans which, if issued, may be transmitted to the bidder by the following means:

- A. Mailed by certified mail with return receipt requested to all requesting bidders (at the respective addresses furnished for such purposes), no later than three (3) days prior to the date fixed for the opening of bids.
- B. Telephoned and/or facsimiled with confirmation of receipt of message by recipient to all requesting bidders (at the respective phone number furnished for such purposes), with a forward copy by mail, notification will be made no later than three days (3) prior to the date fixed for the opening of bids.

Failure of any bidder to receive notification of any such addendum or interpretation shall not relieve such bidder from any obligation under their bid as submitted. All addenda so issued shall become part of the contract documents and shall be acknowledged on the Bid Schedule in the blanks provided for such.

4. INSPECTION OF SITE

Each bidder should visit the site of the proposed work and fully acquaint themselves with the existing conditions there and should fully inform themselves as to the facilities involved, the difficulties and restrictions attending the performance of the contract. The bidder should thoroughly examine and familiarize themselves with the drawings, technical specifications and all other contract documents. The contractor by the execution of the contract shall in no way be relieved of any obligation under it due to their failure to receive or examine any form or legal document or to visit the site or acquaint themselves with the conditions there existing. The OWNER shall reject any claim based on information which the Contractor should have informed himself.

5. ALTERNATE BID ITEMS

No alternate bids or bid items will be considered unless they are specifically requested by the technical specifications or bid schedule.

6. BIDS

- A. All bids must be submitted on the forms provided and are subject to all requirements of the contract documents, including the Drawings.
- B. All bids must be regular in every respect and no interlineations, excisions or special conditions may be made or included by the bidder.
- C. Bid documents, including the bid, and the contractor information form shall be sealed in an envelope and clearly labeled with the words "BID DOCUMENTS", the project number, name of bidder and the date and time of bid opening.
- D. The OWNER may consider as irregular any bid on which there is an alteration of or departure from the bid form and, at its option, may reject any irregular bid.
- E. If a contract is awarded, it will be awarded to a responsible bidder on the basis of the lowest/best bid and the selected alternate bid items, if any.

7. STATEMENT OF BIDDERS QUALIFICATIONS

Each bidder shall submit on the form furnished for that purpose a statement of the bidder's qualifications. This shall include a list of at least five (5) commercial water utilities that the bidder has successfully completed water wells for in a sand or unconsolidated aquifer using mud rotary drilling with an under reamed gravel packed completion including details on the work performed. The OWNER shall have the right to

take such steps as it deems necessary to determine the ability of the bidder to perform their obligations under the contract, and the bidder shall furnish the OWNER all such information and data for this purpose as it may request. The right is reserved to reject any bid where an investigation of the available data does not satisfy the OWNER that the bidder is qualified to carry out properly the terms of the contract.

8. UNIT PRICE

The unit price for each of the several items in the bid shall include its pro-rata share of overhead so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price bid represents the total bid. Any bid not conforming to this requirement may be rejected as informal. Special attention is drawn to this condition, as the unit prices will be used to determine the amount of any change orders resulting from an increase or decrease in quantities.

9. CORRECTIONS

Erasure or other correction in the bid must be noted over the signature of the bidder.

10. TIME FOR RECEIVING BIDS

Bids received prior to the advertised hour of opening shall be kept securely sealed. The officer appointed to open the bids shall decide when the specified time has arrived and no bids received thereafter shall be considered; except that when a bid arrives by mail after the time fixed for opening, but before the reading of all other bids is completed, and it is shown to the satisfaction of the OWNER that the late arrival of the bid was solely due to delay in the mail for which the bidder was not responsible, such bid will be received and considered.

11. WITHDRAWAL OF BIDS

Bids may be withdrawn by written request dispatched for delivery in the normal course of business prior to the bid opening. The bid guaranty of any bidder withdrawing their bid in accordance with the above will be returned promptly.

12. AWARD OF CONTRACT/REJECTION OF BIDS

- A. The contract will be awarded to the responsive, responsible Bidder submitting the lowest/best bid. The bidder selected will be notified at the earliest possible date. The OWNER reserves the right to reject any or all bids and to waive any informality in bids received where such rejection or waiver is in its interest.

- B. The OWNER reserves the right to consider as unqualified to do the work any bidder who does not habitually perform with his forces the major portions of the work involved in construction of the improvements embraced in the contract.

13. EQUAL EMPLOYMENT OPPORTUNITY

Attention is called to the requirements for ensuring that employees and applicants for employment are not discriminated against because of their race, color, creed, sex, or national origin.

14. BID MODIFICATIONS

Any bidder may modify their bid by telegraphic communication at any time prior to scheduled closing time for receipt of bids, provided such modification is received by the OWNER prior to the closing time, and provided furthermore the OWNER is satisfied that a written confirmation of the bid modification over the signature of the Bidder was mailed prior to the closing time. The bid modification should not reveal the bid price, but should provide the addition, subtraction or other modification so that the final prices or terms will not be known by the OWNER until the sealed bid is opened. If written confirmation is not received within 2 days from the closing time, no consideration will be given to the bid modification.

Texas Sales and Use Tax Exemption Certification

This certificate does not require a number to be valid.

Name of purchaser, firm or agency	
Address (Street & number, P.O. Box or Route number)	Phone (Area code and number)
City, State, ZIP code	

I, the purchaser named above, claim an exemption from payment of sales and use taxes (for the purchase of taxable items described below or on the attached order or invoice) from:

Seller: _____

Street address: _____ City, State, ZIP code: _____

Description of items to be purchased or on the attached order or invoice:

Purchaser claims this exemption for the following reason:

I understand that I will be liable for payment of all state and local sales or use taxes which may become due for failure to comply with the provisions of the Tax Code and/or all applicable law.

I understand that it is a criminal offense to give an exemption certificate to the seller for taxable items that I know, at the time of purchase, will be used in a manner other than that expressed in this certificate, and depending on the amount of tax evaded, the offense may range from a Class C misdemeanor to a felony of the second degree.

 Purchaser	Title	Date
--	-------	------

NOTE: This certificate cannot be issued for the purchase, lease, or rental of a motor vehicle.

THIS CERTIFICATE DOES NOT REQUIRE A NUMBER TO BE VALID.

Sales and Use Tax "Exemption Numbers" or "Tax Exempt" Numbers do not exist.

This certificate should be furnished to the supplier.

Do not send the completed certificate to the Comptroller of Public Accounts.

BID FORM

for the

Springs Hill SUD

Blumberg Well No. 1 Project

BID FORM CONTENTS

	Page
ARTICLE 1 – Bid Recipient.....	1
ARTICLE 2 – Bidder’s Acknowledgements	1
ARTICLE 3 – Bidder’s Representations	1
ARTICLE 4 – Bidder’s Certification.....	2
ARTICLE 5 – Basis of Bid.....	3
ARTICLE 6 – Time of Completion	7
ARTICLE 7 – Attachments to this Bid.....	8
ARTICLE 8 – Defined Terms.....	8
ARTICLE 9 – Bid Submittal	8

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Springs Hill SUD

5510 S. St. Hwy 123-Bypass, Seguin, TX 78155

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including, without limitation, those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.

Addendum Date

_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert, visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
 - 2. "Fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "Collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. "Coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL AMOUNT BID
1	Mobilization/Demobilization costs including transportation, moving on site, payment bond, performance bond, insurance, submittals, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
2	Drilling and completing a rig supply well for necessary water for construction activities. Includes all necessary permits required through the Evergreen Underground Water Conservation District. Upon completion of Blumberg Well No. 1, the rig supply shall be plugged and abandoned in accordance with State and District rules for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
4	Furnishing, installing and cementing 40 feet of 26-inch x 0.375-inch steel surface casing within a 30-inch diameter borehole in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	40 LF	\$ _____	\$ _____
5	Reaming or drilling 8 3/4-inch diameter borehole from 40 feet to 1,000 feet and collecting formation samples at 20 foot intervals for sieve analysis, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	960 LF	\$ _____	\$ _____
6	Set of geophysical logs consisting of one (1) triple combo suite of logs complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL AMOUNT BID
7	Gyrodata alignment survey, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
8	Enlarging existing borehole from 8 3/4-inch to 22-inch diameter borehole from 40 feet to 700 feet, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	660 LF	\$ _____	\$ _____
9	Setting cement plug within 8 3/4-inch diameter borehole from 900 feet to 1,000 feet, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	100 LF	\$ _____	\$ _____
10	Caliper log to confirm 22-inch borehole diameter, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
11	Furnishing and installing 702 feet of 16" x 0.500" steel casing with centralizers, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	702 LF	\$ _____	\$ _____
12	Pressure cementing (Class A or B) 16" x 0.500" steel casing from ground surface to a depth of 700 feet, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	700 LF	\$ _____	\$ _____
13	Underreaming existing borehole from 8 3/4-inch to 20-inch diameter borehole from 700 feet to 900 feet, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	200 LF	\$ _____	\$ _____
14	Caliper log to confirm underreamed borehole diameter, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL AMOUNT BID
15	Furnishing and installing 115 feet of 10 3/4" x 0.365" stainless steel (Type 316L) liner with centralizers, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	115 LF	\$ _____	\$ _____
16	Furnishing and installing 185 feet of 10-inch pipe-based stainless steel screen on 10 3/4" x 0.365" perforated stainless steel (Type 316L) liner, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	185 LF	\$ _____	\$ _____
17	Furnishing and installing 250 feet of filter pack (size to be determined upon sieve analysis), complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	250 LF	\$ _____	\$ _____
18	Cleaning and development, including 190 hours of development with air lift pumping using a 10-foot isolation tool with surge block to remove drilling fluid and fines from the water bearing formation, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Hourly Rate.	190 HR	\$ _____	\$ _____
19	Total depth video survey after well development, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
20	Step test at three (3) different production rates, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
21	36-hour aquifer test (test pump provided by contractor) and recovery test including discharge, drawdown, and recovery report (water level measurements shall be taken with a transducer capable of measuring at a time interval of 1 minute), in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Hourly Rate.	36 HR	\$ _____	\$ _____

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL AMOUNT BID
22	Water quality sample per the Plans and Specifications (TCEQ Primary and Secondary constituents, additional water quality parameters and bacteriological samples), complete in place, all in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
23	Furnishing and installing a 1,600 gpm at 496 feet Total Dynamic Head oil-lubricated vertical turbine lineshaft pump (pump bowls and oil tube coated with Tnemec 21 (12 mil coating)) and 300 horsepower 460-volt three-phase motor, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
24	Furnishing and installing 550 feet of 10 3/4" x 0.365" steel discharge column coated (ID & OD) with Tnemec 21 (12 mil coating), complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	550 LF	\$ _____	\$ _____
25	Furnishing and installing 550 feet of 1-inch diameter PVC e-line with cap at base and perforations on the bottom 20 feet strapped to column pipe with stainless steel straps and accessories, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Linear Foot.	550 LF	\$ _____	\$ _____
26	Furnishing Variable Frequency Drive, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
27	Wellhead completion, including slab, concrete seal block, top flange on casing, discharge head, and 3-inch air vent, complete in place, in accordance with the Plans and Specifications, for _____ dollars and _____ cents per Lump Sum.	1 LS	\$ _____	\$ _____
Note: LS - Lump Sum; LF - Linear Foot; HR - Hourly Rate				

TOTAL BID PRICE WRITTEN IN WORDS: _____

Unit Prices have been computed in accordance with Paragraph 11.04.B of the General Conditions. The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

Amounts are to be shown in both words and figures. Discrepancies in the multiplication of units of work and unit prices shall be resolved in favor of the correct total. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

Alternate Bid Items may be included on an alternate basis. These items may or may not be considered in the determination of the apparent lowest bidder. These items may or may not be awarded, at the discretion of the Owner.

Bidder understands that the Owner reserves the rights to reject any and all bids and to waive any informalities in the bidding. Bidder acknowledges that quantities are not guaranteed, and final payment will be based on actual quantities determined as provided in the Contract Documents and Specifications, if applicable.

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

If the contract is to be awarded, it will be awarded to the Best Bid, the Lowest Bidder or the Bidder whose evaluation by the OWNER or whose Bid indicates to the OWNER that the award will be in the best interest of the Project.

Bidder hereby agrees that he is able to commence work under this Contract on or before _____. ("NOTICE TO PROCEED" will establish start date) and to fully complete the project within _____ consecutive calendar days thereafter as stipulated in the Specifications. Bidder further agrees to pay as liquidated damages (as further described in the Contractor Agreement" the sum of \$100.00 for each consecutive calendar day thereafter.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with the Contract Documents on or before the dates or within the number of working days indicated in the documents.

6.02 Bidder accepts the provisions of the Contract Documents as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid Security;
- B. Contractor Information Sheet;
- C. Statement of Bidder's Qualifications;

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

BID BOND

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

BIDDER (*Name and Address*):

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

OWNER (*Name and Address*):

BID

Bid Due Date:

Description (*Project Name and Include Location*):

BOND

Bond Number:

Date (*Not earlier than Bid due date*):

Penal sum _____ \$ _____
(Words) (Figures)

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

BIDDER**SURETY**

Bidder's Name and Corporate Seal (Seal) _____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint ventures, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

CONTRACTOR INFORMATION

COMPANY NAME: _____

ADDRESS, MAILING: _____

ADDRESS, STREET: _____
(if different) _____

PHONE NUMBER: (_____) _____

EMAIL ADDRESS: _____

This Company is: _____ **a corporation;** _____ **partnership;**
_____ **an individual; doing business as** _____

County: _____ **State:** _____

PRINCIPALS (information is required for each as follows).

Title and Name, Home Address, including City, State and Zip Code

Illegible and/or incomplete information on this can cause delays in processing and/or contacting successful bidder.

BIDDER QUALIFICATIONS

List at least three (3) commercial public water supply projects that bidder/driller has successfully completed water wells in the Carrizo-Wilcox Aquifer with a steel casing 16-inches in diameter or larger at depths of over 800 feet (attach a list on a separate page if necessary):

1.
2.
3.
4.
5.

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

Name of Bidder: _____ Date Organized: _____
Address: _____ Date Incorporated: _____

Number of Years in contracting business under current name: _____

Are you a Section 3 business? (see below) ☐ Yes ☐ No

Section 3 Business Concerns:

- a) Businesses that are 51 percent or more owned by Section 3 residents;
- b) Businesses whose permanent, full-time employees include persons, at least 30 percent of whom are currently Section 3 residents, or within three years of the date of first employment with the firm were Section 3 residents;
- c) Businesses that provide evidence of a commitment to subcontract in excess of 25 percent of the dollar amount of all subcontracts to be awarded to businesses that meet the qualifications described above; or
- d) Businesses located within the Grant Recipient's jurisdiction that identifies themselves as Section 3 Business Concerns because they provide economic opportunities for low- and very low income persons.

CONTRACTS ON HAND:

Contracts	Dollar Amount	Completion Date

Type of work performed by your company: _____
Have you ever failed to complete any work awarded to you? _____
Have you ever defaulted on a contract? _____

List the projects most recently completed by your firm (include project of similar importance):

Project	Dollar Amount	Mo/Yr Completed

Major equipment available for **this** contract:

Attach resume(s) for the principal member(s) of your organization, including the officers as well as the proposed superintendent for the project.

Credit available: \$ _____ Bank reference: _____

The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the _____ in verification of the recitals comprising this Statement of Bidder's Qualifications.

Executed this _____ day of _____, 19 _____.

by: _____
(Signature) (Title)

"General Decision Number: TX20200007 01/03/2020

Superseded General Decision Number: TX20190007

State: Texas

Construction Types: Heavy and Highway

Counties: Atascosa, Bandera, Bastrop, Bell, Bexar, Brazos, Burleson, Caldwell, Comal, Coryell, Guadalupe, Hays, Kendall, Lampasas, McLennan, Medina, Robertson, Travis, Williamson and Wilson Counties in Texas.

HEAVY (excluding tunnels and dams, not to be used for work on Sewage or Water Treatment Plants or Lift / Pump Stations in Bell, Coryell, McClellan and Williamson Counties) and HIGHWAY Construction Projects

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2020

* SUTX2011-006 08/03/2011

Rates	Fringes
-------	---------

CEMENT MASON/CONCRETE
FINISHER (Paving and
Structures).....\$ 12.56

ELECTRICIAN.....\$ 26.35

FORM BUILDER/FORM SETTER

Paving & Curb.....\$ 12.94
Structures.....\$ 12.87

LABORER

Asphalt Raker.....\$ 12.12
Flagger.....\$ 9.45
Laborer, Common.....\$ 10.50
Laborer, Utility.....\$ 12.27
Pipelayer.....\$ 12.79
Work Zone Barricade
Servicer.....\$ 11.85

PAINTER (Structures).....\$ 18.34

POWER EQUIPMENT OPERATOR:

Agricultural Tractor.....\$ 12.69
Asphalt Distributor.....\$ 15.55
Asphalt Paving Machine.....\$ 14.36
Boom Truck.....\$ 18.36
Broom or Sweeper.....\$ 11.04
Concrete Pavement
Finishing Machine.....\$ 15.48
Crane, Hydraulic 80 tons
or less.....\$ 18.36
Crane, Lattice Boom 80
tons or less.....\$ 15.87
Crane, Lattice Boom over
80 tons.....\$ 19.38
Crawler Tractor.....\$ 15.67
Directional Drilling
Locator.....\$ 11.67
Directional Drilling
Operator.....\$ 17.24
Excavator 50,000 lbs or
Less.....\$ 12.88
Excavator over 50,000 lbs...\$ 17.71
Foundation Drill, Truck
Mounted.....\$ 16.93
Front End Loader, 3 CY or
Less.....\$ 13.04
Front End Loader, Over 3 CY.\$ 13.21
Loader/Backhoe.....\$ 14.12
Mechanic.....\$ 17.10
Milling Machine.....\$ 14.18
Motor Grader, Fine Grade....\$ 18.51
Motor Grader, Rough.....\$ 14.63
Pavement Marking Machine....\$ 19.17
Reclaimer/Pulverizer.....\$ 12.88
Roller, Asphalt.....\$ 12.78
Roller, Other.....\$ 10.50
Scraper.....\$ 12.27
Spreader Box.....\$ 14.04
Trenching Machine, Heavy....\$ 18.48

Servicer.....\$ 14.51

Steel Worker

Reinforcing.....\$ 14.00
Structural.....\$ 19.29

TRAFFIC SIGNAL INSTALLER

Traffic Signal/Light Pole
Worker.....\$ 16.00

TRUCK DRIVER

Lowboy-Float.....\$ 15.66
 Off Road Hauler.....\$ 11.88
 Single Axle.....\$ 11.79
 Single or Tandem Axle Dump
 Truck.....\$ 11.68
 Tandem Axle Tractor w/Semi
 Trailer.....\$ 12.81

WELDER.....\$ 15.97

WELDERS - Receive rate prescribed for craft performing
 operation to which welding is incidental.

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the

most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.)

and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

"

CONTRACTOR AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____
_____ in the year _____ by and between

(hereinafter called **OWNER**) and

(hereinafter called **CONTRACTOR**).

OWNER AND CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Project for which the Work under the Contract Documents may be the whole or only a part is described as follows:

Article 2. ENGINEER.

The Project has been designed by Malone Wheeler who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIMES.

3.1. The Work will be completed within _____ calendar days after the date when the Contract Times commence to run as provided in the General Conditions, and completed and ready for final payment in accordance with the General Conditions.

3.2. *Liquidated Damages* OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1. above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the

Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER _____ dollars (\$ _____)

for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of:

_____ (\$ _____).

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with the General Conditions. Applications for Payment will be process by ENGINEER as provided in the General Conditions.

5.1. *Progress Payments;* OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, as provided in Paragraphs 5.1.1. below. All such payments will be measured by the schedule of values established in the Bid Schedule.

5.1.1. Prior to completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with the General Conditions.

_____ % of Work completed (with the balance being retainage.)

_____ % (with the balance being retainage) of materials not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in the General Conditions.

5.2. *Final Payment.* Upon final completion and acceptance of the Work in accordance with the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER.

Article 6. INTEREST

All moneys not paid when due as provided in the General Conditions shall bear interest at the maximum rate allowed by law at the place of the Project.

Article 7. CONTRACTOR'S REPRESENTATIONS.

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1. CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda, if any) and the other related data identified in the Bidding Documents including "technical data".

7.2. CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

7.4. CONTRACTOR is aware of the general nature of the work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.

7.5. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.6. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

8.1. This Agreement (pages 1 to 6 inclusive).

- 8.2. Exhibits to this Agreement, if any.
- 8.3. Performance, Payment and other Bonds.
- 8.4. Notice to Proceed.
- 8.5. General Conditions.
- 8.6. Supplementary Conditions.
- 8.7. Specifications bearing the title _____ and consisting of divisions and pages, as listed in the table of contents thereof.
- 8.8. Drawings consisting of a cover sheet and sheets numbered _____ through _____, inclusive with each sheet bearing the following general title: _____.
- 8.9. Addenda numbers _____ to _____, inclusive.
- 8.10. CONTRACTOR's Bid (pages _____ to _____, inclusive).
- 8.11. Documentation submitted by CONTRACTOR prior to Notice of Award.
- 8.12. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to the General Conditions.

The documents listed in paragraphs 8.2 et. seq. above are considered a part to this Agreement (except as expressly noted otherwise above).

Article 9. MISCELLANEOUS.

- 9.1. No assignment by a party hereto of any rights under or interest in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.2. OWNER and CONTRACTOR each binds itself, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

9.3. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in () copies. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

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

OWNER:

BY _____

Name _____

Title _____

(SEAL)

ATTEST:

BY _____

Name _____

Title _____

CONTRACTOR:

BY _____

Name _____

Title _____

Address _____

(Seal)

_____ (If a Corporation)

ATTEST:

BY _____

Name _____

Title _____

PERFORMANCE BOND

CONTRACTOR *(name and address):*

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

OWNER *(name and address):*

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

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

Contractor's Name and Corporate Seal *(seal)*

Surety's Name and Corporate Seal *(seal)*

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

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)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

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,
 - 5.11 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
 - 5.12 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:

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



Endorsed by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC's Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition). The full EJCDC Construction series of documents is discussed in the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

Copyright © 2013:

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

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

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

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, 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
Article 6 – Bonds and Insurance		19
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
Article 7 – Contractor’s Responsibilities		26
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
Article 8 – Other Work at the Site		38
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.

Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that 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.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

TABLE OF CONTENTS

		Page
SC-1.01.A	Defined Terms	3
SC-1.01.A.8	Change Order	3
SC-1.01.A.48	Work Change Directive	3
SC-1.01.A.49	Abnormal Weather Conditions	3
SC-1.01.A.50	USDA Rural Utilities Service	3
SC-1.01.A.51	Manufacturer's Certification Letter	3
SC-1.01.A.52	AIS	4
SC-2.02.A	Copies of Documents	4
SC-4.01.A	Commencement of Contract Time; Notice to Proceed	4
SC-4.05.C.2	Delays in Contractor's Progress	4
SC-5.03.C	Subsurface and Physical Conditions	4
SC-5.06.A,B	Hazardous Environmental Conditions at Site	5
SC-6.03.K	Contractor's Insurance	5
SC-7.02.B	Contractor's Responsibilities	6
SC-7.03	Services, Materials, and Equipment	7
SC-7.04	"Or Equals"	7
SC-7.05	Substitutes	8
SC-7.06.A,B,E	Concerning Subcontractors, Suppliers, and Others	8
SC-7.09	Taxes	8
SC-7.11.A	Record Documents	8
SC-7.16.A	Shop Drawings and Sample Submittal Requirements	9
SC-7.17	Contractor's General Warranty and Guarantee	9
SC-9.13	Owner's Site Representative	9
SC-10.03	Project Representative	9
SC-10.10.A	American Iron & Steel	10
SC-11.06.A.1	Procedures	10
SC-11.07.C	Execution of Change Orders	10
SC-13.02.C	Allowances	10
SC-14.03	Defective Work	10
SC-15.01.B	Applications for Payments	11

SC-15.01.C	Review of Applications	11
SC-15.01.D	Payment Becomes Due	11
SC-15.02.A	Contractor's Warranty of Title	11
SC-15.03	Substantial Completion	11
SC-18.09	Tribal Sovereignty	12
SC-19	Federal Requirements	12
SC-19.01	Agency Not a Party	12
SC-19.02	Contract Approval	12
SC-19.03	Conflict of Interest	12
SC-19.04	Gratuities	12
SC-19.05	Small Minority and Women's Businesses	13
SC-19.06	Anti-Kickback	13
SC-19.07	Clean Air and Pollution Control Acts	13
SC-19.08	Equal Opportunity Requirements	14
SC-19.09	Byrd Anti-Lobbying Amendment	14
SC-19.10	Environmental Requirements	14
SC-19.11	Contract Work Hours and Safety Standards Act	15
SC-19.12	Debarment and Suspension	15
SC-19.13	Procurement of Recovered Materials	15
SC-19.14	Section 746 of Title VII of the Consolidated Appropriations Act of 2017	16
SC-19.15	Definitions	16

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

SC-1.01. Add to the list of definitions in Paragraph 1.01.A by inserting the following as numbered items in their proper alphabetical positions:

Geotechnical Baseline Report (GBR) — The interpretive report prepared by or for Owner regarding subsurface conditions at the Site, and containing specific baseline geotechnical conditions that may be anticipated or relied upon for bidding and contract administration purposes, subject to the controlling provisions of the Contract, including the GBR's own terms. The GBR is a Contract Document.

Geotechnical Data Report (GDR) — The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for Owner in support of the Geotechnical Baseline Report. The GDR's content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.

SC-1.01.A.8. Add the following language to the end of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC C-941. Agency approval is required before Changes Orders are effective.

SC-1.01.A.48. Add the following language to the end of Paragraph 1.01.A.48:

A Work Change Directive cannot change the Contract Price or Contract Times without a subsequent Change Order.

SC-1.01.A.49. Add the following new Paragraph after Paragraph 1.01.A.48:

Abnormal Weather Conditions – Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered Abnormal Weather Conditions.

SC-1.01.A.50. Add the following new Paragraph after new Paragraph 1.01.A.49:

Agency - The Project is financed in whole or in part by USDA Rural Utilities Service pursuant to the Consolidated Farm and Rural Development Act (7 USC Section 1921 et seq.). The Rural Utilities Service programs are administered through the USDA Rural Development offices; therefore, the Agency for these documents is USDA Rural Development.

SC-1.01.A.51. Add the following new Paragraph after new Paragraph 1.01.A.50 (as amended by RUS 1780-26):

Manufacturer's Certification letter is documentation provided by the manufacturer, supplier, distributor, vendor, fabricator, etc. to various entities stating that the American Iron and Steel products

to be used in the project are produced in the United States in accordance with American Iron and Steel requirements. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

SC-1.01.A.52. Add the following new Paragraph after new Paragraph 1.01.A.51:

AIS - refers to requirements mandated by Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference. The term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.02 Copies of Documents

SC-2.02.A. Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor five (5) copies of the Contract Documents (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF).

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01 Commencement of Contract Times; Notice to Proceed

SC-4.01.A. Amend the last sentence of Paragraph 4.01.A by striking out the following words:

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.

SC-4.05 Delays in Contractor's Progress

SC-4.05.C.2 Amend Paragraph 4.05.C.2 by striking out the following text: "abnormal weather conditions;" and inserting the following text:

Abnormal Weather Conditions;

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

SC-5.03 Subsurface and Physical Conditions

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

- C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:
1. Report dated *June 7, 2017, prepared by Rock Engineering and Testing Laboratory, Inc., entitled: "Subsurface Exploration, Laboratory Testing Program and Foundation Recommendations for the Proposed Natalia Water Improvement Project, Natalia, Texas", consisting of 16 pages.* The Technical Data contained in such report upon whose accuracy Contractor may rely are those indicated in the definition of Technical Data in the General Conditions.

SC-5.06 Hazardous Environmental Conditions at Site

SC-5.06 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.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.03 Contractor's Insurance

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

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

- 1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	<u>Statutory</u>
Federal, if applicable (e.g., Longshoreman's):	<u>Statutory</u>
Jones Act coverage, if applicable:	<u>N/A</u>
Bodily injury by accident, each accident	<u>\$ ---</u>
Bodily injury by disease, aggregate	<u>\$ ---</u>

Employer's Liability:

Bodily injury, each accident	<u>\$ 1,000,000</u>
Bodily injury by disease, each employee	<u>\$ 1,000,000</u>
Bodily injury/disease aggregate	<u>\$ 2,000,000</u>

For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:

\$ 1,000,000

Foreign voluntary worker compensation	<u>Statutory</u>
--	-------------------------

- 2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	<u>\$ 2,000,000</u>
--------------------------	----------------------------

Products - Completed Operations Aggregate	<u>\$ 1,000,000</u>
--	----------------------------

Personal and Advertising Injury \$ 1,000,000

Each Occurrence (Bodily Injury and Property Damage) \$ 1,000,000

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person \$ 500,000

Each accident \$ 1,000,000

Property Damage:

Each accident \$ ---

[or]

Combined Single Limit of \$ 1,000,000

4. Excess or Umbrella Liability:

Per Occurrence \$ 1,000,000

General Aggregate \$ 1,000,000

5. Contractor's Pollution Liability:

Each Occurrence \$ N/A

General Aggregate \$ N/A



If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following:

Not Applicable

7. Contractor's Professional Liability:

Each Claim \$ 500,000

Annual Aggregate \$ 1,000,000

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

SC-7.02 Contractor’s Responsibilities

SC-7.02.B. Add the following new subparagraphs immediately after Paragraph 7.02.B:

1. Regular working hours will be Monday through Friday from 8:00 am to 5:00 pm.
2. Owner's legal holidays are:
 - A. New Year’s Day
 - B. Presidents Day
 - C. Good Friday (except if this lands on the city's annual festival, the holiday moves to day after Easter)
 - D. Memorial Day
 - E. Independence Day
 - F. Labor Day
 - G. Veterans Day
 - H. Thanksgiving Day
 - I. Day After Thanksgiving
 - J. Christmas Eve
 - K. Christmas Day

SC-7.03.D. Add the following new sentence after Paragraph 7.02.C:

All iron and steel products must meet American Iron and Steel requirements.

SC-7.04 “Or Equals”

SC-7.04.A Amend the third sentence of Paragraph 7.04A by striking out the following words:

“Unless the specification or description contains or is followed by words reading that no like, equivalent, or ‘or-equal’ item is permitted.”

SC-7.04.A.1 Amend the last sentence of Paragraph 7.04.A.1.a.3 by striking out “and” and adding a period at the end of the Paragraph a.3.

SC-7.04.A.1 Delete paragraph 7.04.A.1.a.4 in its entirety and insert the following in its place:

[Deleted]

SC-7.04.B.1 Add the following new subparagraphs immediately after Paragraph 7.04.B:

Contractor shall include a Manufacturer’s Certification letter for compliance with American Iron and Steel requirements in support data, if applicable. Refer to Manufacturer’s Certification Letter provided in these Contract Documents. In addition, for the Deminimis Waiver, Contractor shall maintain an itemized list of incidental components and ensure that the cost is less than 5% of total materials cost for

project; for the Minor Components Waiver, the Contractor shall maintain a list of products to which the minor components waiver applies and the cost of the non-domestically produced component is less than 5% of total materials cost of that product.

SC-7.05 Equals

SC-7.05.A.3.a.4 Add the following new subparagraphs immediately after Paragraph 7.05.A.3.a.3:

4) comply with American Iron and Steel by providing Manufacturer's Certification letter of American Iron and Steel compliance, if applicable. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

SC-7.06 Concerning Subcontractors, Suppliers, and Others

SC-7.06A Amend Paragraph 7.06A by adding the following text to the end of the Paragraph:

The Contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s), without prior written approval of the owner.

SC-7.06.B Delete paragraph 7.06.B. in its entirety and insert the following in its place:

[Deleted]

SC-7.06E Amend Paragraph 7.06E by striking out "Owner may also require Contractor to retain specific replacements; provided, however, that".

SC 7.09 Taxes

SC 7.09 Add a new paragraph immediately after Paragraph 7.09.A:

- B. Owner is exempt from payment of sales and compensating use taxes of the State of Texas and of cities and counties thereof on all materials to be incorporated into the Work.**
 - 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.**
 - 2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.**

SC 7.11 Record Documents

SC 7.11.A Modify by inserting the following after "written interpretation and clarification,"

Manufacturers' Certification letter is documentation provided by the manufacturer, supplier, distributor, vendor, fabricator, etc. to various entities stating that the iron and steel products to be used in the project are produced in the United States in accordance with American Iron and Steel Requirements. Refer to Manufacturer's Certification Letter provided in these Contract Documents

SC 7.16 Shop Drawings, Samples, and Other Submittals

SC-7.16.A.1.e Add the following new sentence immediately after Paragraph SC-7.16.A.1.d :

e. obtained Manufacturer's Certification letter for any item in the submittal subject to American Iron and Steel requirements and include the Certificate in the submittal. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

SC-7.16.D.9 Add the following new sentence immediately after Paragraph SC-7.16.D.8:

Engineer's review and approval of Shop Drawing or Sample shall include review of compliance with American Iron and Steel requirements, as applicable.

SC 7.17 Contractor's General Warranty and Guarantee

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

Contractor shall certify upon Substantial Completion that all Work and Materials has complied with American Iron and Steel requirements as mandated by Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference. Contractor shall provide said Certification to Owner. Refer to General Contractor's Certification Letter provided in these Contract Documents.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

SC-9.13 Owner's Site Representative

SC-9.13 Add the following new paragraph immediately after Paragraph 9.12 of the General Conditions:

SC-9.13 Owner will furnish an "Owner's Site Representative" to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The Owner's Site Representative is not Engineer's consultant, agent, or employee. Owner's Site Representative will be [_____]. The authority and responsibilities of Owner's Site Representative follow: [_____].

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Project Representative

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

- B. On this Project, by agreement with the Owner, Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work.

SC-10.10 American Iron & Steel

SC-10.10.A Add the following new paragraph

A. "Services required to determine and certify that to the best of the Engineer's knowledge and belief all iron and steel products referenced in engineering analysis, the Plans, Specifications, Bidding Documents, and associated Bid Addenda requiring design revisions are either produced in the United States or are the subject of an approved waiver and services required to determine to the best of the engineer's knowledge and belief that approved substitutes, equals, and all iron and steel products proposed in the shop drawings, Change Orders and Partial Payment Estimates are either produced in the United States or are the subject of an approved waiver under Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017).

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

SC-11.06 Change Proposals

SC-11.06.A.1 Modify by inserting the following sentence after "within 15 days after the submittal of the change Proposal.

Include supporting data (name of manufacturer, city and state where the product was manufactured, description of product, signature of authorized manufacturer's representative) in the Manufacturer's Certification Letter, as applicable.

SC-11.07 Execution of Change Orders

SC-11.07.C Add the following new Paragraph after Paragraph 11.07.B:

C. All Contract Change Orders must be concurred in by Agency before they are effective.

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

SC-13.02 Allowances

SC-13.02.C Delete Paragraph 13.02.C in its entirety and insert the following in its place:

[Deleted]

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

SC-14.03 Defective Work

SC-14.03.G Add the following new Paragraph after Paragraph 14.03.F:

G. Installation of Materials that are non-compliant with American Iron and Steel requirements shall be considered defective work.

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

SC-15.01 Progress Payments

SC-15.01.B Amend the second sentence of Paragraph 15.01.B.1 by striking out the following text: “a bill of sale, invoice, or other”.

SC-15.01.B.3 Add the following language at the end of Paragraph 15.01.B.3:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor.

SC-15.01.B.4 Add the following new Paragraph after Paragraph 15.01.B.3:

By submitting Materials for payment, Contractor is certifying that the submitted Materials are compliant with American Iron and Steel requirements. Manufacturer’s Certification letter for Materials satisfy this certification. Refer to Manufacturer’s Certification Letter provided in these Contract Documents. The Application for Payment form to be used in this Project is EJCDC C-620. The Agency must approve all Applications for Payment before payment is made.

SC-15.01.C.2.d Add the following new sentence after 15.01.C.2.c:

d. the Materials presented for payment comply with American Iron and Steel.

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

The Application for Payment with Engineer’s recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due twenty (20) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

SC-15.02 Contractor’s Warranty of Title

SC-15.02.A Amend Paragraph 15.02.A by striking out the following text: “no later than seven days after the time of payment by Owner” and insert “no later than the time of payment by Owner.”

SC-15.03 Substantial Completion

SC 15.03.A Moddify 15.03.A by adding the following after the last sentence:

Services required to determine and certify that to the best of the Contractor’s knowledge and belief all substitutes, equals, and all iron and steel products proposed in the shop drawings, Change Orders and Partial Payment Estimates, and those installed for the project are either produced in the United States or are the subject of an approved waiver under Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference.

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living

expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 18 – MISCELLANEOUS

SC-18.09 Tribal Sovereignty

SC-18.09 Add the following new Paragraph after Paragraph 18.08:

Tribal Sovereignty -No provision of this Agreement will be construed by any of the signatories as abridging or debilitating any sovereign powers of the ____ Tribe; affecting the trust-beneficiary relationship between the Secretary of the Interior, Tribe, and Indian landowner(s); or interfering with the government-to-government relationship between the United States and the Tribe.

SC-19 Add Article 19 titled “FEDERAL REQUIREMENTS”

SC-19.01 Add the following language as Paragraph 19.01 with the title “Agency Not a Party”:

- A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees is a party to this Contract.

SC-19.02 Add the following sections after Article 19.01 with the title “Contract Approval”:

- A. Owner and Contractor will furnish Owner’s attorney such evidence as required so that Owner’s attorney can complete and execute the following “Certificate of Owner’s Attorney” (Exhibit I of RUS Bulletin 1780-26) before Owner submits the executed Contract Documents to Agency for approval.
- B. Concurrence by Agency in the award of the Contract is required before the Contract is effective.

SC-19.03 Add the following language after Article 19.02.B with the title “Conflict of Interest”:

- A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer. Owner’s officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner’s officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

SC-19.04 Add the following language after Article 19.03.A with the title “Gratuities”:

- A. If Owner finds after a notice and hearing that contractor, or any of Contractor’s agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract

provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

- B. In the event this Contract is terminated as provided in paragraph 19.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

SC-19.05 Add the following language after Article 19.04.B with the title “Small, Minority and Women’s Businesses”:

- A. Contracting with small minority businesses, women’s business enterprises, and labor surplus area firms. If Contractor intends to let any subcontractor for a portion of the work, Contractor must take all necessary affirmative steps to assure that minority businesses, women’s business enterprises, and labor surplus area firms are used when possible. Affirmative steps must include:
 - (1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
 - (2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
 - (3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
 - (4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and
 - (5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

SC-19.06 Add the following after Article 19.05.A with the title “Anti-Kickback”:

- A. Contractor shall comply with the Copeland Anti-Kickback Act (40 USC 3145) as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States”). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

SC-19.07 Add the following after Article 19.06.A with the title “Clean Air and Pollution Control Act (42 U.S.C. 7401-7671q.) and Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended”:

- A. Contractor to agree to comply with all applicable standards, order or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

SC-19.08 Add the following after Article 19.07.A with the title “Equal Employment Opportunity”:

- A. The Contract is considered a federally assisted construction contract. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of “federally assisted construction contract” in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”

SC-19.09 Add the following after Article 19.08.A with the title “Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)”:

- A. Contractors that apply or bid for an award exceeding \$100,000 must file the required certification (RD Instruction 1940-Q, Exhibit A-1). The Contractor certifies to the Owner and every subcontractor certifies to the Contractor that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining the Contract if it is covered by 31 U.S.C. 1352. The Contractor and every subcontractor must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

SC-19.10 Add the following after Article 19.09.A with the title “Environmental Requirements”:

When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental conditions:

- A. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
- B. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas as delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, e.g., alluvial soils on NRCS Soil Survey Maps.
- C. Historic Preservation - Any excavation by Contractor that uncovers an historical or archaeological artifact or human remains shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).
- D. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

- E. Mitigation Measures – The following environmental mitigation measures are required on this Project:
- A. The contracts must contain a clause which states, “If cultural materials are encountered during construction, work must cease in the immediate area of the discovery. Work may continue in those project locations outside of the discovery area, with written approval from USDA Rural Development. The Contractor must immediately notify the Engineer, the Texas Historical Commission (512) 463-5915 (Wilson County Contact), and the USDA Rural Development State Environmental Coordinator (254) 742-9789”.
 - B. The contractor shall be responsible to review the Environmental Report for threatened or endangered species listed in the area of the project and to instruct the site construction personnel not to disturb any species or habitat which may be found on site during the construction. A species shall be left alone to leave the site or if the species remains or habitat is found, the contractor shall immediately notify the Engineer, the Texas Parks and Wildlife Department, the United States Fish and Wildlife Services, and the USDA Rural Development State Environmental Coordinator (254) 742-9789.
 - C. Any landscaping or re-seeding shall be limited to seeding and replacing with native trees, scrubs and herbaceous species that are adaptable, drought tolerant and conserve water.

SC-19.11 Add the following after Article 19.10.E. with the title “Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)”:

- A. Where applicable, for contracts awarded by the Owner in excess of \$100,000 that involve the employment of mechanics or laborers, the Contractor must comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, the Contractor must compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

SC-19.12 Add the following after Article 19.11.A with the title “Debarment and Suspension (Executive Orders 12549 and 12689)”:

- A. A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

SC-19.13 Add the following after Article 19.12.A with the title “Procurement of recovered materials”:

The Contractor must comply with 2 CFR Part 200.322, “Procurement of recovered materials.”

SC-19.14 Add the following after Article 19.13

Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference applies an American Iron and Steel requirement to this project. All iron and steel products used in this project must be produced in the United States. The term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. The de minimis and minor components waiver {add project specific waivers as applicable} apply to this contract.

SC-19.15 Add the following after Article 19.14

Assistance recipient” is the entity that receives funding assistance from programs required to comply with Section 746 Division A Title VII of the Consolidated Appropriations Act of 2017 (Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference. This term includes owner and/or applicant.

“Certifications” means the following:

- Manufacturers’ certification is documentation provided by the manufacturer or fabricator to various entities stating that the iron and steel products to be used in the project are produced in the United States in accordance with American Iron and Steel (AIS) Requirements. If items are purchased via a supplier, distributor, vendor, etc. vs. from the manufacturer or fabricator directly, then the supplier, distributor, vendor, etc. will be responsible for obtaining and providing these certification letters to the parties purchasing the products.
- Engineers’ certification is documentation that plans, specifications, and bidding documents comply with AIS.
- Contractors’ certification is documentation submitted upon substantial completion of the project that all iron and steel products installed were produced in the United States.

“Coating” means a covering that is applied to the surface of an object. If a coating is applied to the external surface of a domestic iron or steel component, and the application takes place outside of the United States, said product would be considered a compliant product under the AIS requirements. Any coating processes that are applied to the external surface of iron and steel components that would otherwise be AIS compliant would not disqualify the product from meeting the AIS requirements regardless of where the coating processes occur, provided that final assembly of the product occurs in the United States. This exemption only applies to coatings on the external surface of iron and steel components. It does not apply to coatings or linings on internal surfaces of iron and steel products, such as the lining of lined pipes. All manufacturing processes for lined pipes, including the application of pipe lining, must occur in the United States for the product to be compliant with AIS requirements.

“Construction materials” are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered “structural steel”.

Note: Mechanical and electrical components, equipment and systems are not considered construction materials. See definition of mechanical and electrical equipment.

“Consulting engineer” is an individual or entity with which the owner has contracted to perform engineering/architectural services for water and waste projects funded by the programs subject to AIS requirements).

“De minimis incidental components” are various miscellaneous low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. Examples of incidental components could include small washers, screws, fasteners (such as “off the shelf” nuts and bolts), miscellaneous wire, corner bead, ancillary tube, signage, trash bins, door hardware etc. Costs for such de minimis incidental components cumulatively may comprise no more than a total of five percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed one percent of the total cost of the materials used in and incorporated into a project.

“General contractor” is the individual or entity with which the applicant has contracted (or is expected to) to perform construction services (or for water and waste projects funded by the programs subject to AIS requirements). This includes bidders, contractors that have received an award from the applicant and any party having a direct contractual relationship with the owner/applicant. A general contractor is often referred to as the prime contractor.

“Iron and steel products” are defined as the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. Only items on the above list made primarily of iron or steel, permanently incorporated into the project must be produced in the United States. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

“Manufacturers” meaning a supplier, fabricator, distributor, materialman, or vendor is an entity with which the applicant, general contractor or with any subcontractor has contracted to furnish materials or equipment to be incorporated in the project by the applicant, contractor or a subcontractor.

“Manufacturing processes” are processes such as melting, refining, forming, rolling, drawing, finishing, and fabricating. Further, if a domestic iron and steel product is taken out of the United States for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-U.S. sources.

“Mechanical equipment” is typically that which has motorized parts and/or is powered by a motor.

“Electrical equipment” is typically any machine powered by electricity and includes components that are part of the electrical distribution system. AIS does apply to mechanical equipment.

“Minor components” are components within an iron and/or steel product otherwise compliant with the American Iron and Steel requirements. This is different from the de minimis definition where de minimis pertains to the entire project and the minor component definition pertains to a single product. This waiver, would allow non-domestically produced miscellaneous minor components comprising up to five percent of the total material cost of an otherwise domestically produced iron and steel product to be used. However, unless a separate waiver for a product has been approved, all other iron and steel components in said product must still meet the AIS requirements. This waiver does not exempt the whole product from the AIS requirements only minor components within said product and the iron or steel components of the product must be produced domestically. Valves and hydrants are also subject

to the cost ceiling requirements described here. Examples of minor components could include items such pins and springs in valves/hydrants, bands/straps in couplings, and other low cost items such as small fasteners etc.

“Municipal castings” are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and solid waste infrastructure.

“National Office” refers to the office responsible for the oversight and administration of the program nationally. The National Office sets policy, develops program regulations, and provides training and technical assistance to help the state offices administer the program. The National Office is located in Washington, D.C.

“Owner” is the individual or entity with which the general contractor has contracted regarding the work, and which has agreed to pay the general contractor for the performance of the work, pursuant to the terms of the contract for water and waste projects funded by the programs subject to AIS requirements. For the purpose of this Bulletin, this term is synonymous with the term “applicant” as defined in 7 CFR 1780.7 (a) (1), (2) and (3) and is an entity receiving financial assistance from the programs subject to the AIS requirements.

“Pass through Entities” is an entity that provides a subaward to a loan and/or grant recipient to carry out part of a Federal program. Examples are grantees utilizing the Revolving Loan Program and Household Water Well Program and Alaska Native Tribal Health Consortium (ANTHC) or the State of Alaska from the RAVG Program.

“Primarily iron or steel” is defined as a product made of greater than 50 percent iron or steel, measured by cost. The cost should be based on the material costs. An exception to this definition is reinforced precast concrete (see Definitions). All technical specifications and applicable industry standards (e.g. NIST, NSF, AWWA) must be met. If a product is determined to be less than 50 percent iron and steel, the AIS requirements do not apply.

For example, the cost of a fire hydrant includes:

- (1) The cost of materials used for the iron portion of a fire hydrant (e.g. bonnet, body and shoe); and
- (2) The cost to pour and cast to create those components (e.g. labor and energy).

Not included in the cost are:

- (1) The additional material costs for the non-iron and steel internal workings of the hydrant (e.g. stem, coupling, valve, seals, etc.); and
- (2) The cost to assemble the internal workings into the hydrant body.

“Produced in the United States” means that the production in the United States of the iron or steel products used in the project requires that all manufacturing processes must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives.

“Project” is the total undertaking to be accomplished for the applicant by consulting engineers, general contractors, and others, including the planning, study, design, construction, testing, commissioning, and start-up, and of which the work to be performed under the contract is a part. A project includes all activity that an applicant is undertaking to be financed in whole or part by programs subject to AIS requirements. The intentional splitting of projects into separate and smaller contracts or obligations to avoid AIS requirements is prohibited.

“Reinforced Precast Concrete” may not consist of at least 50 percent iron or steel, but the reinforcing bar and wire must be produced in the United States and meet the same standards as for any other iron

or steel product. Additionally, the casting of the concrete product must take place in the United States. The cement and other raw materials used in concrete production are not required to be of domestic origin. If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the United States.

“Steel” means an alloy that includes at least 50 percent iron, between 0.02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel, and other specialty steels.

“Structural steel” is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees, and zees. Other shapes include but are not limited to, H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

“Ultimate recipient” is a loan or grant recipient receiving funds from a pass-through entity. Examples include: (1) a loan recipient from the Revolving Loan Fund; (2) a loan recipient from the Household Water Well Program; and (3) a grant recipient from ANTHC or the State of Alaska from the RAVG Program.

“United States” means each of the several states, the District of Columbia, and each Federally Recognized Indian Tribe.

TECHNICAL SPECIFICATIONS - CONTENTS

SPRINGS HILL SUD

BLUMBERG WELL NO. 1 PROJECT

DIVISION 01 – GENERAL REQUIREMENTS

SECTION

Summary of Work_____	01001
Definitions, Standards, and Abbreviations_____	01010
Submittal Data_____	01100
Construction Operations_____	01200
Project Safety and Safety Devices_____	01250
Measurement and Payment_____	01300
Inspection_____	01400
Warranties and Guarantees_____	01500

DIVISION 02 – SITE WORK

SECTION

General_____	02000
Fence - Chain Link_____	02200
Water Well_____	02500

DIVISION 03 – CONCRETE

SECTION

Cast-In-Place-Concrete_____	03000
-----------------------------	-------

DIVISION 11 – EQUIPMENT

SECTION

General_____	11000
Oil Lubricated Vertical Lineshaft Pump_____	11310
E-Line and Vent_____	11400

DIVISION 15 – MECHANICAL

SECTION

General_____	15000
Ductile Iron Pipe and Fittings_____	15100
Steel Pipe – Water_____	15150
Polyvinyl Chloride Pipe and Fittings – Water_____	15200
Testing and Disinfection - Water_____	15300
Gate Valves_____	15400
Check Valves_____	15410
Combination Air Release and Vacuum Valves - Water_____	15420
Water Meters – Turbine_____	15605

Section 01001 - Summary of Work

1.0 General

1.1 Scope

The Work to be performed under the provisions of these Contract Documents consists of furnishing all materials, equipment, tools, transportation, services, labor, and supervision necessary for construction of facilities and installation of any and all equipment together with appurtenances for the work covered by these specifications.

The work which shall consist of the following:

Construction of Blumberg Well No. 1

- Blumberg Well No. 1 shall consist of 40 feet of 26-inch surface casing, 702 feet of 16-inch steel casing cemented to 700 feet with 185 feet of 10-inch stainless steel screen within a 20-inch underreamed gravel packed borehole. The well shall be equipped with a 1,600 gpm, 300 H.P. oil lubricated vertical turbine lineshaft pump set with 550 feet of 10-inch steel column pipe.

The project includes all site work necessary for well construction, including but not necessarily limited to clearing and grubbing and brush disposal; grading; and drainage ditching.

The well shall be suitable in all regards for use as a public water supply. The well shall conform to all regulatory requirements for such facilities. The well shall be constructed and completed in accordance with the provisions of AWWA A-100-20 or latest version and the specifications included herein.

After completion of drilling and test pumping, the Driller shall remove all equipment and materials and make appropriate adjustments to the height of the surface conduit, casing and liner. The Driller shall pour the seal slab and complete the well head. The seal slab shall extend to the top of the casing cement.

All material and equipment used in the construction of the well shall not contain more than a weighted average of 0.25% lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fixtures and fixtures and meet standards of NSF 61.

All newly installed pipes and related products must conform to American National Standards Institute/NSF International (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.

All plastic pipes for use in public water systems must also bear the NSF International Seal of Approval (NSF-pw).

The Contractor shall comply with all State, County, and Evergreen Underground Water Conservation District rules.

Project name is Springs Hill SUD Blumberg Well No. 1 Project.

1.2 Materials

The Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities that are required to execute, complete, and deliver the work within the specified Contract time, except as otherwise specifically stated in the Contract Documents.

Any work necessary to be performed after regular working hours, on Sundays or legal holidays shall be performed without additional expense to the Owner and subject to approval in advance by the Owner.

Compliance with job safety requirements and health standards as published by the Occupational Safety and Health Administration, United States Department of Labor, shall be provided without additional expense to the Owner.

1.3 Scope, Nature, and Intent of Specifications and Plans

The Specifications and Plans are intended to supplement but not necessarily duplicate one another. Any work exhibited in one and not in the other shall be executed as if it had been set forth in both.

Should the requirements appear to be in conflict or the Contractor have questions on the Work, the Contractor shall secure written instructions from the Owner and Engineer before proceeding with the construction affected thereby. The intent is that the Work shall be performed according to the Contract Documents.

All products specified by manufacturer's name shall be installed in accordance with manufacturer's printed instructions.

When equipment or material furnished by the Contractor cannot be installed as specified or as shown on the Plans, the Contractor shall, without extra cost to the Owner, make all modifications required to properly install the equipment or material. Such modifications shall be subject to the approval of the Owner and the Engineer.

Dimensions and elevations shown on the Plans shall be accurately followed even though they may differ from scaled measurements. Proposed work shown on the Plans, in which the dimensions are not clearly indicated, shall be postponed until necessary dimensions have been obtained from the Engineer.

The general arrangement of the Work shall be as indicated on the Plans. Detail drawings or proposed departures due to actual field condition or other causes shall be submitted to the Engineer for approval.

No attempt has been made in the Contract Documents to segregate work to be performed by any trade or subcontract. Any segregation between the trades or crafts will be solely a matter for agreement between the Contractor and his employees and/or his subcontractors.

The Contract Documents as a whole shall govern the construction of the entire Work. The applicable provisions thereof shall govern work to be performed under each section.

The Contractor shall check all dimensions, elevations, and quantities shown on the Plans and schedules provided by the Engineer and shall notify the Engineer of any discrepancy between the Plans and the conditions on the ground or of any error or omission in Plans or in the layout or instructions which he may discover in the course of the Work. Full instructions shall be furnished by the Engineer should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

1.4 Quality of Materials and Equipment

Unless specifically provided otherwise in each case, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standard specifications and shall be new, unused, and undamaged when installed or otherwise incorporated in the Work.

Contractor shall submit for approval a list of makes and types of all equipment and materials he proposes to use prior to placing orders for same. This shall be done promptly upon award of contract to avoid delays in delivery and completion.

Any materials or equipment installed without the Engineer's prior approval shall, if so directed by the Engineer, be removed and replaced with approved material or equipment at the Contractor's expense

1.5 Items of Work

All work within the scope of this project shall be completed in accordance with the intent of the Contract Documents. Major items of work are included but are not limited to items listed in the Contract Documents.

2.0 Scheduling

The Contractor shall coordinate all construction activities and scheduling through the Owner as other construction activities may be in progress.

All material and pertinent equipment must be on site prior to commencing construction.

All required traffic and safety control devices must be in place and inspected prior to the commencing of construction.

Location of all underground utility lines shall be made prior to the commencing of construction to insure in-field verification of location.

The Contractor shall report to the Engineer any conflict between existing utilities or other structures with the proposed improvements. The Owner and the Engineer shall have sufficient time to resolve any conflict.

2.1 Down Time for Utility Tie-Ins

All tie-ins that require disruption of service shall be completed with less than four (4) hours per tie-in.

All tie-ins shall be coordinated with the Owner a minimum of 48 hours in advance. The amount of downtime is very limited; therefore, the Contractor shall have all pipe exposed and necessary equipment and supplies on site prior to the actual tie-in.

2.2 Public Access

The Contractor shall make every effort to complete construction and to allow immediate access to all driveway entrances. Adequate barricades shall be used to route traffic (vehicular and pedestrian) during construction, if necessary.

The Contractor shall complete each day's work in sufficient detail to allow the public access to their property. Temporary backfill or trench covering, if necessary, shall be required to accomplish this access.

3.0 Services Provided by Others

3.1 Material Testing

The Contractor shall be responsible for reimbursing the Material Testing Firm directly for all testing and re-testing.

The Owner shall not be responsible for testing of any construction materials. Testing would only be required to confirm suitability of any construction material, proposed for use on the project, deemed questionable by the Engineer and/or Owner.

All testing shall be in accordance with the Specifications herein.

The Contractor shall be responsible for the coordination of all testing.

3.2 Water for Construction

Water for flushing and/or testing is available at no charge but not delivered from the Owner. All water used in drilling operations shall contain a chlorine residual of at least 0.5 mg/L.

Water for trench backfill, road construction, washing and other associated needs is available from the Owner.

Due to the volume of water that may be required, coordination shall be made with the Owner prior to use.

The Contractor shall coordinate with the Engineer/Hydrogeologist and Owner prior to discharge of any water used in the construction of the Work to adequately allow for drainage of this water. Drainage provisions must be acceptable to the adjoining property and right-of-way owners. Drainage onto public and/or private roadways is prohibited. The Contractor shall utilize designated fire hydrants and/or flush lines for any water used in the construction of the Work.

3.3 Electrical

The Owner will be responsible for providing electrical service to the property after the well is completed. Contractor will be responsible for providing power for the test pump and construction.

3.4 Staking

The Owner will provide horizontal and vertical location and staking.

3.5 Bacteriological Testing

The Contractor shall be responsible for any sampling required including chemical analysis and bacteriological.

4.0 Construction

4.1 Layout and Staking

The Owner and Engineer shall stake the well site. The Contractor shall lay out the Work according to the lines, grades, elevations, dimensions and general arrangement as shown on the Plans or specified herein.

Except as otherwise required, all buried pipe shall have a minimum cover of 30 inches. All drain pipes shall have a minimum grade of 0.50 percent.

4.2 Spoil and Debris Removal

All excavated earth material in excess of material required for the project shall be the property of the Contractor. All demolition debris, trash, rubbish, etc. found at the site shall be the property of the Contractor. The Contractor shall remove from the site and properly dispose all excess spoil, demolition debris, trash, and rubbish.

END OF SECTION

Section 01010 - Definitions, Standards, and Abbreviations

1.0 General

The work covered by this Section includes the Definitions, Standards, and Abbreviations found within these Contract Documents.

2.0 Definitions

General Explanation: Certain terms used in Contract Documents are defined in this article. Definitions and explanations contained in this Section are not necessarily complete, but are general for the work to the extent that they are not stated more explicitly in another element of the Contract Documents.

General Requirements: The provisions or requirements of other Division Sections apply to entire work of the Contract and, where so indicated, to other elements which are included in the Work.

Indicated: The term, “indicated”, is a cross-reference to graphic representations, notes or schedules on the drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in Contract Documents. Where terms such as “shown”, “noted”, “scheduled”, and “specified” are used in lieu of “indicated”, it is for the purpose of helping the reader locate the cross-reference, and no limitation of location is intended except as specifically noted.

Directed, Requested, Etc.: Where not otherwise explained, terms such as “directed”, “requested”, “authorized”, “selected”, “approved”, “required”, “accepted”, and “permitted” mean “directed by the Engineer”, “requested by the Engineer”, and similar phrases. However, no such implied meaning will be interpreted to extend the Engineer’s responsibility into the Contractor’s area of construction supervision.

Approve: Where used in conjunction with the Engineer’s response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term “approved” will be held to limitations of the Engineer’s responsibilities and duties as specified in the General and Supplementary Conditions. In no case shall the Engineer’s approval be interpreted as a release of the Contractor from responsibilities to fulfill requirements of the Contract Documents.

Project Site: The term, “project site”, is defined as the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other work as part of the project. The extent of the project site is shown on the drawings, and may or may not be identical with the description of the land upon which the project is to be constructed.

Furnish: The term “furnish” is used to mean “supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations.”

Install: The term “install” is used to describe operations at project site including the actual “unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing protecting, cleaning, installing and similar operations.”

Provide: The term “provide” means “to furnish and install, complete and ready for intended use.”

Installer: The “installer” is “the entity” (person or firm) engaged by the Contractor, its subcontractor or sub-subcontractor for performance of a particular element of construction at the project site, including installation, erection, application and similar required operations. It is a requirement that installers are experienced in the operations they are engaged to perform.

Testing Laboratories: A “testing laboratory” is an independent entity engaged to perform specific inspections or tests of the work, either at the project site or elsewhere, and to report, and (if required) interpret results of those inspections or tests.

3.0 Specification Standards

3.1 General

This article is provided to help the user of these specifications more readily understand the format, language, implied requirements and similar conventions of content. None of the following explanations shall be interpreted to modify the substance of contract requirements.

3.2 Specification Format

1. These specifications are organized based upon the Construction Specifications Institute’s 16 Division format. The organization of these specifications into Division, Sections and/or Trade Headings conforms to generally recognized industry practices.
2. Divisions are grouping of related or similar sections. The divisions are recognized as the construction industry consensus method of uniform specification organization.
3. Sections are considered as the basic units of work. The section title is descriptive only and not intended to limit the meaning or content of a section or to be completely descriptive of requirements specified therein.
4. Section numbering is used to facilitate cross-references in the Contract Documents. Sections are placed in the Specifications in numeric sequence; however, the numeric sequence is not complete and the listing of the sections in the “Table of Contents” at the beginning of the Technical Specifications must be

consulted to determine the numbers and names of specification sections in the Contract Documents.

5. Pages are numbered independently for each section, and are recorded in the listing of sections (Table of Contents) at the beginning of the Technical Specifications. The section number is shown together with the page number at the bottom of each page to facilitate the location of text in the Technical Specifications
6. This project specification has been produced employing certain conventions in the use of language as well as conventions regarding the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - A. In certain circumstances, the language of the Specifications and other Contract Documents is of the abbreviated type. It implies words and meanings that should be appropriately interpreted. Singular words shall be interpreted as plural and plural words should be interpreted as singular where applicable and where the full context of the Contract Documents so indicates.
 - B. Imperative language is used generally in the specifications. Requirements expressed imperatively shall be performed by the Contractor. At certain locations in the text, for clarity, contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted.
 - C. The techniques or methods of specifying requirements varies throughout the text. The method used for specifying on an element of the Work has no bearing on requirements for another element of the Work.
 - D. In certain circumstances, the specification text requires or implies that specific elements of the Work shall be assigned to specialists who must be engaged to perform that element of the Work. Such assignments are special requirements over which the Contractor shall have no choice or option. Such assignments are intended to establish which party or entity involved in a specific element of the Work is considered as being sufficiently experienced in the indicated construction processes or operations to be recognized as “expert” in those processes or operations. The ultimate responsibility for fulfilling all contract requirements remains with the Contractor.

These requirements should not be interpreted to conflict with the enforcement of building codes and similar regulations governing the work.

- E. The use of certain titles such as “carpentry” in the specification text, is not intended to imply that the Work must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter”.

It also is not intended to imply that the requirements specified apply exclusively to work by tradespersons of that corresponding generic name.

4.0 Industry Standards

4.1 Applicability of Standards

Except where more explicit or stringent requirements are written into the Contract Documents, applicable construction industry standards have the same force and effect as if bound into or copied directly into the Contract Documents. Such industry standards are made a part of the Contract Documents by reference. Individual specification sections indicate which codes and standards the Contractor must keep available at the project site for reference. Latest revision of each standard, at time of the bid opening, shall prevail.

1. Referenced standards (standards referenced directly in the Contract Documents) take precedence over non-referenced standards that are recognized in the industry for applicability to the Work.
2. Except as otherwise limited by the Contract Documents, non-referenced standards recognized in the construction industry are defined as having direct applicability to the Work and shall be enforced for the performance of the Work. The decision as to whether an industry code or standard is applicable to the Work, or as to which of several standards are applicable, is the sole responsibility of the Engineer.

A. Conflicting Requirements

Where compliance with two (2) or more standards is specified, and where these standards establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents specifically indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Engineer for a decision prior to proceeding.

B. Copies of Standards

The Contract Documents require that each entity performing work be experienced in that part of the Work being performed. Each entity shall also be required to be familiar with industry standards applicable to that part of the Work. Copies of applicable standards are not bound with the Contract Documents.

Where copies of standards are needed for proper performance of the Work, the Contractor is required to obtain such copies directly from the publication source.

Although certain copies of standards needed for enforcement of the requirements may be required submittals, the Engineer reserves the right to require the Contractor to submit additional copies of these standards as necessary for enforcement of requirements.

5.0 Abbreviations

5.1 Trade Associations

Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Names are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of the date of the Contract Documents.

AAMA	-	American Architectural Manufacturer's Association
AASHTO	-	American Association of State Highway and Transportation Officials
ACI	-	American Concrete Institute
ACPA	-	American Concrete Pipe Association
AGA	-	American Gas Association
AI	-	Asphalt Institute
AIA	-	American Institute of Architects
AISC	-	American Institute of Steel Construction
AISI	-	American Iron and Steel Institute
ANSI	-	American National Standards Institute
API	-	American Petroleum Institute
ASC	-	Adhesive and Sealant Council
ASCE	-	American Society of Civil Engineers
ASHRAE	-	American Society of Heating, Refrigerating, And Air Conditioning Engineers
ASME	-	American Society of Mechanical Engineers
ASPE	-	American Society of Plumbing Engineers
ASSE	-	American Society of Sanitary Engineering
ASTM	-	American Society for Testing and Materials
AWS	-	American Welding Society
AWWA	-	American Water Works Association
BHMA	-	Builders Hardware Manufacturers Association
CRSI	-	Concrete Reinforcing Steel Institute
CSI	-	Construction Specifications Institute
IEEE	-	Institute of Electrical and Electronic Engineers
IES	-	Illuminating Engineering Society of North America
ISA	-	Instrument Society of America
LPI	-	Lightning Protection Institute
MBMA	-	Metal Building Manufacturer's Association

NAAMM	-	National Association of Architectural Metal Manufacturers
NAPF	-	National Association of Plastic Fabricators
NEC	-	National Electric Code
NEMA	-	National Electrical Manufacturers Association
NFPA	-	National Fire Protection Association
NSF	-	National Sanitation Foundation
SDI	-	Steel Deck Institute
UL	-	Underwriters Laboratories
WRI	-	Wire Reinforcement Institute
WSC	-	Water Systems Council

5.2 Government Agencies and Programs

The names and titles of government agencies and programs are frequently abbreviated. The following acronyms or abbreviations as referenced in the Contract Documents indicate the names of agencies of the government. Names are subject to change but are believed to be, but are not assured to be, accurate and up-to-date as of the date of the Contract Documents.

CE	-	Corps of Engineers
CFR	-	Code of Federal Regulations
DOC	-	Department of Commerce
DOT	-	Department of Transportation
EDAP	-	Economically Disadvantaged Areas Program
EPA	-	Environmental Protection Agency
FAA	-	Federal Aviation Administration
FCC	-	Federal Communications Commission
FS	-	Federal Specification
GSA	-	General Services Administration
MIL	-	Military Standardization Documents
ORCA	-	Office of Rural Community Affairs
OSHA	-	Occupational Safety and Health Administration
REA	-	Rural Electrification Administration
RD	-	Rural Development
RUS	-	Rural Utility Services
RWAF	-	Rural Water Assistance Fund
TCDP	-	Texas Community Development Program
TDHCA	-	Texas Department of Housing and Community Affairs
TWDB	-	Texas Water Development Board
USDA	-	United States Department of Agriculture

6.0 Governing Regulations/Authorities

6.1 General

The procedure followed by the Engineer has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing Contract Documents; recognizing that such information may or may not be of significance in relation to the Contractor's responsibilities for performing the Work. The Contractor should contact governing authorities directly for necessary information and decisions having a bearing on performance of the Work.

The Contractor shall be responsible for obtaining copies of pertinent regulations, and educating Contractor's employees and sub-contractors of said regulations.

6.2 Jurisdictional Regulations

The Contractor shall maintain, and shall require prime sub-contractors to maintain, complete current information on jurisdictional matters, regulations, actions and pending actions, as applicable to the Work. The Contractor shall discuss with employees and/or subcontractors any new developments at appropriate project meetings at the earliest feasible dates. The Contractor shall record information of relevance along with the actions agreed upon. The manner in which Contract Documents have been organized and subdivided is not intended to be an indication of jurisdictional agreements. The Contractor shall assign and sub-contract the work, and employ tradesmen and laborers, in a manner which shall not unduly risk jurisdictional disputes of a kind which could result in conflicts, delays, claims and losses in the performance of the Work.

END OF SECTION

Section 01100 - Submittal Data

1.0 General

1.1 Scope

This Section specifies administrative and procedural requirements for submittal data required for performance of the Work, including, but not limited to:

1. Contractor's construction schedule.
2. Submittal schedule.
3. Daily construction reports.
4. Shop drawings.
5. Product data.
6. Permits.
7. Materials, equipment and components.
8. Field and/or pre-fabricated items.
9. Operation and maintenance data.
10. List of subcontractors.
11. Well information.

1.2 Payment

No separate payment shall be made for preparation of information required within this Section. All costs shall be included in the prices provided in the Bid Proposal.

1.3 Limitations

Review is only for general conformance with design concepts of project and general compliance with the Contract Documents. Contractor is responsible for confirming and correlating dimensions at job site; for information which pertains to fabrication process or construction techniques; and for coordination of work of all trades. Review of shop drawings shall not relieve Contractor, and/or subcontractor, and/or material supplier of responsibility for deviation from requirements of Contract Documents nor for errors or omissions in shop drawings; or the safe and satisfactory performance of the Work.

2.0 Procedures

2.1 Coordination

Coordinate preparation and processing of submittals with performance of construction activities. Contractor shall transmit each submittal in advance of performance of related construction activities so as to grant Engineer sufficient time for review and approval to avoid delays.

Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

Coordinate transmittal of different types of submittals for related elements of the Work so processing shall not be delayed by the need to review submittals concurrently for coordination.

The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

2.2 Processing

Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.

Allow two (2) weeks for initial review. Allow additional time if processing must be delayed, to permit coordination with subsequent submittals. The Engineer shall promptly advise the Contractor when a submittal being processed must be delayed for coordination.

Allow two (2) weeks for reprocessing each submittal.

No extension of Contract Time shall be authorized because of failure to transmit submittals for the Engineer sufficiently in advance of the Work to permit processing.

2.3 Submittal Preparation

Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

Include the following information on the label for processing and recording action taken.

- a. Project name.
- b. Date.
- c. Name and address of Engineer.
- d. Name and address of Contractor.
- e. Name and address of Subcontractor.
- f. Name and address of Supplier.
- g. Name of Manufacturer.
- h. Number and title of appropriate Specification Section.
- i. Drawing number and detail references, as appropriate.

2.4 Submittal Transmittal

Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor shall be returned without action.

On the transmittal, record relevant information and requests for data. On the form, or separate sheets, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Engineer's procedures necessary for certification of Substantial Completion.

3.0 Contractor's Construction Schedule

3.1 Schedule

Prepare a fully developed construction schedule. Submit within 15 days of the date established for "Commencement of the Work".

Provide a separate timeline for each significant construction activity. Provide information identifying the first working day of each week. Indicate estimated completion percentage in ten (10) percent increments. As Work progresses, indicate Actual Completion.

Prepare the schedule on a reproducible media, of sufficient width that show data for the entire construction period.

Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Engineer's procedures necessary for certification of Substantial Completion.

3.2 Distribution

Following response to the initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the temporary field office as applicable.

When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

3.3 Updating

Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

4.0 Submittal Schedule

After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within ten (10) days of the date required for establishment of the Contractor's construction schedule.

5.0 Daily Construction Reports

Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Engineer at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
6. Stoppages, delays, shortages, losses.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and start-ups.
13. Partial Completions, occupancies.
14. Substantial Completions authorized.

6.0 Shop Drawings

6.1 General

Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

- a. Dimensions.
- b. Identification of products and materials included.
- c. Compliance with specified standards.
- d. Notation of coordination requirements.
- e. Notation of dimensions established by field measurement.

6.2 Sheet Size

Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8 ½" x 11" but not larger than 36" x 48".

6.3 Initial Submittal

Submit one (1) correctable, reproducible print and one (1) copy for the Engineer's review. The reproducible print will be returned.

6.4 Final Submittal

Submit three (3) copies typically, or five (5) copies where required for maintenance manuals. Two (2) copies will be retained typically, with the remainder to be returned.

One (1) of the copies to be returned shall be marked-up and maintained as a "Record Document".

Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

6.5 Coordination Drawings

Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.

Preparation of coordination drawings may include components previously shown in detail on Shop Drawings or Product Data.

7.0 Operation and Maintenance Data

The Contractor shall provide the owner with detailed data and related information appropriate to allow the Owner to maintain and operate the equipment to be supplied. The data shall consist of, but not be limited to:

1. Description of equipment and component parts showing the function, normal operating characteristics, limiting conditions, performance curves, engineering data

and tests, and complete nomenclature and commercial number of all replaceable parts.

2. Operating procedures for start-up, break-in, routine and normal operating instruction, regulation, control, stopping, shut-downs, emergency instructions, seasonal operating instruction, and special operating instructions.
3. Maintenance procedures for routine operations, guide to “trouble-shooting”, disassembly repair and re-assembly, alignment, adjusting and checking.
4. Service and lubrication schedule with list of lubricants required.
5. Manufacturer’s printed operating and maintenance instruction.
6. Description of sequence of operation by control manufacturer.
7. Original manufacturer’s parts list, bill of materials, illustrations, assembly drawings, and diagrams required for maintenance.
8. As installed control and electrical diagrams by controls manufacturer.
9. Lists of recommended original manufacturer’s spare parts, quantities to be maintained in storage and current prices.
10. Additional data as may be helpful to the Owner for instruction of Owner’s personnel.
11. Sufficient data to allow a contractor to install equipment.

8.0 Samples

When samples are required of the Contractor, not less than two (2) units shall be furnished. At the Engineer’s request, samples for materials may be taken from stockpiles at the job site or other location and furnished directly to the materials laboratory chosen by the Owner.

The Contractor shall provide all equipment and supplies and assistance in securing samples at no additional expense to the Owner.

9.0 Concrete Data

Prior to commencing the construction of any concrete work, the Contractor shall submit a copy of the mix design proposed to be used for each mix showing source of materials, proposed slump and the proportional weights of cement, saturated surface dry aggregates and water. The Contractor shall also submit a certificate showing slump and seven (7) day and 28-day test results made in accordance with ASTM Methods by an approved commercial testing laboratory

on the mix proposed to be used. All or part of the mix design and testing may be waived by the Engineer upon submission of a copy of a previously used mix design and test records of concrete made with materials from the proposed source which is of the same quality for each mix to be furnished under the Contract.

10.0 Well Information

Upon Substantial Completion of the well(s), the Contractor shall supply the following information bound in an 8 ½" x 11" manual. The information shall include:

1. State of Texas Well Report.
2. Location Map.
3. Geophysical Log.
4. Sieve analysis.
5. Material settings including bore size, centralizers, gravel pack, packers, etc.
6. Cementer's report.
7. Pump test data.
8. Chemical analysis reports.
9. Bacteriological analysis reports.
10. Log of drilling, development and completion.
11. Water Quality Analysis.
12. Production pump operation and maintenance data.

11.0 Engineer's Action

Except for submittals for record, information or similar purposes, where action and return is required or requested, the Engineer will review each submittal, mark to indicate action taken, and return promptly.

Compliance with all specified characteristics is the Contractor's responsibility.

END OF SECTION

Section 01200 - Construction Operations

1.0 General

This Section specifies administrative and procedural requirements for operations of the Contractor during the performance of the Work, including, but not limited to:

- A. Land for construction purposes.
- B. Use of premises and removal of construction related debris.
- C. Clean up during construction.
- D. Maintenance of improvements related to the Work.
- E. Protection of existing facilities, objects, etc.
- F. Underground utility crossings.
- G. Crossing of roadways, driveways, etc.
- H. Maintenance of vegetation.
- I. Control of dust.
- J. Pollution of water.
- K. Excess spoil.
- L. Unclassified excavation.
- M. Damage to existing property.
- N. Post construction clean up.
- O. Workmanship.

2.0 Land for Construction Purposes

The Contractor shall be permitted to use available space belonging to the Owner for construction and storage purposes only as designated and shown on the Plans, or as directed in writing by the Owner or Engineer.

The Contractor shall be solely responsible for obtaining and shall pay all costs in connection with any additional storage or work area sites which may be required for proper completion of the Work.

The Contractor shall have the responsibility for the protection and safekeeping of equipment and materials on the site and that no claim shall be made against the Owner by reason of any act of an employee or trespasser. Also, should any occasion arise necessitating access to the sites occupied by these stored materials and equipment, the Contractor owning or responsible for the stored materials or equipment shall immediately move same.

No materials or equipment may be placed upon the property of the Owner until the Owner has approved the location within the designated storage area.

3.0 Use of Premises and Removal of Construction Related Debris

The Contractor shall at his own expense:

- A. Take every precaution against injuries to persons or damage to property.
- B. Store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the Work as shall not unduly interfere with the progress of the Work or the Work of any other Contractors.
- C. Place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work.
- D. Remove all surplus material, false work, temporary structures, including foundations thereof, plant of any description and any other construction related materials from his operations prior to final payment.
- E. Effect all cutting, fitting or patching of the Work required to make the same to conform to the Plans and Specifications and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other Contractor.

4.0 Cleanup During Construction

- A. The Contractor shall keep all work areas free of litter and unnecessary trash. Trash barrels shall be supplied for eating areas and emptied as necessary at the Contractor's expense.
- B. The Contractor shall, at all times, keep the job site free from all materials, debris and rubbish as is practicable and shall remove same from any portion of the job site when it becomes objectionable or interferes with the progress of the project in the opinion of the Engineer.
- C. The premises, material, tools, and equipment shall be maintained so as to minimize contamination to the premises, adjacent properties, etc.
- D. The Contractor shall furnish, install and maintain ample sanitary facilities for the workmen. As the need arises, a sufficient number of enclosed temporary toilets shall be conveniently placed as required at least 150 feet from the well unless they are of a sealed, leakproof type. Drinking water shall be provided from an approved source, so piped or transported as to keep it safe and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing and governing health regulations.

5.0 Project Maintenance

- A. The Contractor shall maintain and keep in good repair the improvements covered by these Contract Documents during the life of the contract.
- B. The Contractor shall maintain and keep in good repair all facilities used by the Contractor in the process of performing the Work.
- C. The Contractor shall make timely and suitable repairs to the approval of the Owner of any facility which is damaged as a result of the Contractor's activities.
- D. Where existing facilities are to be relocated or otherwise modified, the Contractor shall coordinate his activities with the Owner of the existing facility.

6.0 Underground Utility Crossings

- A. The Contractor shall use utmost caution in the construction and/or installation of all materials, equipment and components around and/or across any underground utility. An attempt has been made to show the location of all of these foreign utilities in the Construction Plans. The location of those shown is not guaranteed to be accurate or complete. The Contractor shall, at his own expense, locate and protect these lines, and if they are damaged, he shall replace them at no charge to the Utility Owner and to the satisfaction of the Engineer and/or Utility Owner. Should the Utility Owner require that their forces repair any damage, the Contractor shall reimburse the Utility Owner for expenses.
- B. An affected Utility shall be given a minimum of 48 hours' notice prior to crossing or paralleling any underground utility lines so that an accurate location can be made of the buried utility.

7.0 Roadway Crossings

- A. The Contractor shall be responsible for maintaining access to all roadways and private entrances. If such roadway must be crossed and left open overnight, the Contractor shall cover the crossing with a 1-inch minimum thick steel plate.
- B. Any crossing temporarily left in this manner must be constructed to safely allow vehicular passage.

8.0 Maintenance of Vegetation

- A. The Contractor shall notify the Owner, private landowner and/or governmental jurisdiction in possession of public right-of-way prior to removing vegetation that

may be necessary due to construction. Specifications may be required from these entities for the extent and methods to govern in trimming, topping, tree balance, type of cuts, painting cuts and clean-up. These Specifications are intended to reduce damage due to trimming and/or removal of vegetation to the areas of the Work.

9.0 Dust Control

- A. The Contractor shall use all means necessary to prevent spread of dust during and between performance of construction. The Contractor shall prevent dust from being a nuisance or hazard to the public and adjoining landowners.

10.0 Water Pollution

- A. The Contractor shall conduct operations so as to avoid water pollution and contamination of storm water, surface waters and ground water. All equipment, fuels and lubricants, construction materials and other substances shall be stored so as to avoid or minimize leaks and exposure. The Contractor shall erect and maintain appropriate barriers to prevent, minimize and mitigate erosion and sedimentation resulting from construction.
- B. The Contractor shall respond quickly and effectively to any events that may occur so as to halt, control and mitigate any pollution that does occur and restore the affected area as soon as possible. Any instances of pollution shall be reported immediately to the appropriate regulatory agency by the Contractor.

11.0 Excess Spoil

Material from the various excavations shall be temporarily stored on the site at locations approved by the Owner. Excess material to be disposed shall be disposed of in accordance with all applicable federal, state, and local rules and regulations and with approval of the Engineer.**12.0**

12.0 Unclassified Excavation

All excavation will be unclassified. It shall be the responsibility of the bidder to perform all subsurface investigations the bidder deems necessary to determine the nature and extent of material to be excavated.

13.0 Sanitary Conditions

- A. The proposed facilities shall be maintained in a sanitary condition at all times.

- B. Water used for the construction operations, that is in contact with existing or proposed potable water facilities, shall be obtained from an approved potable water supply and contain a chlorine residual of at least 0.5 mg/L. All pipe, fittings, tanks, etc. used to transport or handle the water shall be potable. The slush pit shall be constructed and maintained so as to minimize contamination of the drilling mud.
- C. In the construction of a public water well, the Contractor shall add sufficient chlorine, chlorine compounds or other disinfectant to the drilling fluid so as to maintain sanitary conditions of the well to the satisfaction of the Engineer. This shall include the adding of a disinfectant at least at the start of drilling each day.

14.0 Protection of and Damage to Existing Property

Where excavation or demolition endangers adjacent structures and utilities, the Contractor shall at his own expense carefully support and protect all such structures and/or utilities so that there will be no failure or settlement. Where it is necessary to move services, poles, guy wires, pipelines, or other obstructions, the Contractor shall notify and cooperate with the utility owner. In case damage to an existing structure or utility occurs, whether failure or settlement, the Contractor shall restore the structure or utility to its original condition and position without compensation from the Owner.

The Contractor shall be responsible for all damage to pipes, conduit, electrical wiring, streets, roads, curbs, sidewalks, highways, shoulders, sprinkle systems, yard landscaping, ditches, embankments, culverts, bridges, or other public or private property which may be caused by the Contractor as it relates to the performance of the Work.

The Contractor shall make satisfactory and acceptable arrangements with the person or agency having ownership or jurisdiction over the damaged property concerning its repair or replacement. The Contractor shall repair or replace damaged property with material and/or workmanship of equal or greater quality than the property that was damaged.

The Contractor shall agree to immediately repair or replace any property that has been damaged when such repair or replacement is determined to be an emergency, or such damaged property provides a financial hardship on the property owner.

15.0 Post Construction Clean Up

- A. Prior to final inspection by the Engineer, Owner, and funding agency in some circumstances, the Contractor shall have the entire work area cleaned of all trash and debris resulting from the project construction, and all such trash and debris shall be disposed of at the Contractor's expense.

16.0 Workmanship

The Specifications are intended to be so written that only first-class workmanship and finish of the best grade and quality will result. The fact that these Specifications may fail to be so complete as to cover all details will not relieve the Contractor of full responsibility for providing a completed project of high quality, first class finish and appearance and satisfactory operation, all within the apparent intent of the Plans and Specifications.

17.0 Payment

No separate payment will be made for items required by the Specifications or shown on the Plans. Any additional facilities needed for construction operations that become necessary within the process of completing the construction of this Contract shall be furnished or replaced by the Contractor at no additional expense to the Owner.

END OF SECTION

Section 01250 - Project Safety and Safety Devices

1.0 General

This Section specifies administrative and procedural requirements for project safety and project safety devices required for performance of the Work.

2.0 Worker and Public Safety

- A. The Contractor shall take all necessary precautions for the safety of employees and any other affected parties. The Contractor shall comply with all applicable laws, ordinances, rules, codes, regulations and order of any governing body having jurisdiction for the safety of human life and/or property to protect them from damage, injury or loss.
- B. The Contractor shall assure that all safety regulations are adhered to, specifically in regards to the wearing of protective garments and devices required to protect workers from injury.
- C. The Contractor shall be fully aware of all safety provisions required in accordance with the OSHA Safety and Health Standards.

3.0 Safety Devices

- A. The Contractor shall supply and use ample and proper barricades, lights, handlines, and other equipment designed to protect the workmen and public during the prosecution of the work. The Contractor shall refer to the current "Texas Manual on Uniform Traffic Control Devices" for proper utilization of safety devices. Upon completion of the job, the safety devices shall be removed and each site restored to its original condition.
- B. All excavation at depths greater than 5 feet shall be in compliance with Section 13300 - Trench Safety.
- C. The construction set-up procedures shall be carefully planned using adequate blocking and leveling the ground.
- D. Construction personnel should wear the appropriate safety equipment including, but not limited to heavy steel-toed work boots, hard hats and gloves. Loose clothing should be avoided.

- E. The Contractor shall observe safe operating procedures during equipment start-up, use and shut-down. Proper maintenance and inspection of all equipment and machinery shall be on-going.

4.0 Aerial Utility Safety

The Contractor shall maintain the following minimum safe clearance in all directions between equipment, personnel and/or public and aerial utilities.

- A. Power Lines - 22 feet
- B. Communication Lines - 18 feet

The Contractor, prior to commencing construction, shall coordinate with and adhere to any safe minimum distance as specified by any adjoining Utility if greater than those stated within this Section.

END OF SECTION

Section 01300 - Measurement and Payment

1.0 General

This Section specifies the methods of measurement and payment as required for performance of the Work. The determination of quantities of work acceptably completed under the terms of the Contract, or as directed by the Engineer in writing, shall be made by the Engineer, based on measurements made by the Engineer.

2.0 Measurement

Quantities shown in the Bid Schedule of these Contract Documents shall be used as a basis for payment to the Contractor, unless stated quantities are shown to the satisfaction of the Engineer to be in substantial error. Measurements shall be taken according to standard methods used in common practice, and shall be actual length, area, solid contents, numbers, and/or weight.

Methods of measurement of specific materials, equipment, components, etc. are specified within these Specifications.

3.0 Payment

The Contract price shall be the total compensation for all labor, materials, equipment and incidentals used to complete the work and perform any and all subsidiary tasks and operations. Any work not specifically listed in these Contract Documents is intended to be subsidiary to the other items.

END OF SECTION

Section 01400 - Inspection

1.0 General

- A. This Section specifies the rights and intentions of the Engineer, Hydrogeologist Owner, Regulatory Agency, and/or Funding Agency in relation to the inspection of the construction of the Work.
- B. All construction and materials under this contract shall be subject to inspection by the Engineer, Hydrogeologist, Owner, Regulatory Agency, and/or Funding Agency at any time deemed necessary. The Contractor shall provide access to the work, cooperate and assist with such inspections.
- C. The Engineer and/or his designated representative shall observe and periodically inspect the construction in sufficient detail to become satisfied that the work is proceeding in general accordance with the Contract Documents, but shall not guarantee the Contractor's performance.
- D. All material, equipment, and/or components delivered to the construction site are subject to inspection by the Engineer, or his designated representative, to assure that it meets specifications. Any material found not to meet the required specification must be removed from the site and replaced with material in compliance with the required specifications.
- E. The Contractor shall give the Owner and Engineer sufficient advance notice of any and all required testing.

2.0 Concrete

The Contractor shall take concrete cylinders for testing at seven (7) day and 28-day breaks. One (1) set of test cylinders shall be made for each 50 cubic yards of concrete poured.

3.0 Painting

Any and all painting may be checked by the Engineer and/or an independent laboratory at the discretion of the Owner in accordance with AWWA standards.

4.0 Piping

Each load of pipe delivered to the job site shall be checked by the Engineer, or his representative, to assure that it meets specifications. If a load of pipe is found to have inadequate wall thickness or tolerances greater than specified, randomly selected samples of pipe shall be immediately sent

to the National Sanitation Foundation of Ann Arbor, Michigan or another approved commercial laboratory. The NSF shall determine whether selected samples meet NSF Specifications, and other specifications for the specific contract. Should the NSF, or other commercial laboratory selected, concur that the pipe does not meet specifications, it is to be understood that all of the pipe delivered to the site shall be immediately removed and replaced by the Contractor at no cost to the Owner. The Engineer and Owner assume no responsibility for the pipe. The Engineer and Owner shall not be responsible for the pipe or its installation.

END OF SECTION

Section 01500 - Warranties and Guarantees

1.0 General

The Contractor shall warrant that the Work is properly constructed in accordance with the design, all applicable state and federal regulations and proper construction techniques.

The warranty period shall be one (1) year from the date of acceptance of the Work. In the event that a defect is discovered during the warranty period, the period shall be extended indefinitely until the defect is corrected.

2.0 Special Warranty

For any specially warranted equipment, the Manufacturer shall jointly warrant the equipment to both the Contractor and the Owner against all defects in materials and workmanship; and shall guarantee that the equipment will meet the requirements of the Specifications, for a period of not less than one (1) year from the date of Final Acceptance of the Work. In addition, the equipment furnished by the Contractor shall be free from defects in design.

Should the equipment not meet the requirements of the Specifications, the Equipment Manufacturer shall correct or service the equipment at no additional cost to meet the specified requirements, where any such deficiencies are the responsibility of the Equipment Manufacturer. In the event the equipment is unable to meet the specified requirements within the warranty period, the Equipment Manufacturer shall refund an amount equal to the purchase price of new equipment which will meet the specified requirements.

The Manufacturer's warranty shall clearly state accuracy, operational limitations, tolerances, etc., which may affect performance of the equipment as well as a description of what performance capabilities can be expected from the equipment. In the event that these statements are ambiguous or are not in conformity with the specified requirements, the equipment shall not be accepted.

The Contractor shall be responsible to ensure that the Manufacturer's special equipment warranty is not voided by acceptance of the terms of purchase agreements between Contractor and Manufacturer. In all events, the Contractor shall be held ultimately responsible for enforcement of the requirements of this warranty at his expense.

Within the warranty period and upon notification of the Contractor by the Owner, the Contractor shall promptly make needed adjustments, repairs, or replacements arising out of defects which, in the judgement of the Engineer or the Owner, become necessary during such period.

The cost of all materials, parts, labor, transportation, supervision, special tools, and supplies required for replacement of parts, repair of parts, or correction of abnormalities shall be paid by the Contractor or by his surety under the terms of the Performance Bond.

The Contractor also extends the terms of this guarantee to cover repaired parts and all replacement parts furnished under the guarantee provisions for a period of one (1) year from the date of their installation.

If within ten (10) days after the Owner or Engineer gives the Contractor notice of a defect, failure, or abnormality of the Work the Contractor neglects to make, or undertake with due diligence to make, the necessary repairs or adjustments, the Owner is hereby authorized to make the repairs or adjustments himself or order the work to be done by a third party, and the cost of said Work shall be paid by the Contractor.

In the event of an emergency where, in the judgement of the Owner, delay would cause serious loss or damage, repairs or adjustments may be made by the Owner or a third party chosen by the Owner without giving notice to the Contractor, and the cost of the Work shall be paid by the Contractor or by his surety under the terms of the Performance Bond.

END OF SECTION

Section 02000 – General

1.0 Description

This division shall consist of construction of site work for construction of proposed improvements, including, but not limited to site grading, fencing, and clearing.

2.0 Construction Methods

- A. Clearing. The Contractor shall remove existing fence from project area.

3.0 Applicable Publications

The following publications for the issues listed below, but referred to thereafter by basic designation only, form a part of this Specification to the extent indicated by the referred thereto:

- A. AWWA STANDARDS, Current Published, American Water Works Association (AWWA).
- B. FEDERAL REGISTER, Volume 52, Page 2, Wednesday, April 15, 1987, Proposed Amended Change for OSHA Standards, 29 CFR, Part 1926, Subpart P.
- C. EXCAVATION AND TRENCHING OPERATION, OSHA 2226, U.S. Department of Labor, 1985 (Revised) or any current changes or revisions.
- D. CONSTRUCTION INDUSTRY, OSHA Safety and Health Standards (24 CFR 1926/1910), OSHA 2207, 1985 with any current changes and revisions.

4.0 Weather Conditions

Construction shall be performed only above the minimum conditions set forth in each item of this division and work shall be halted at any time that in the judgment of the Operator and/or Engineer conditions are such that quality of construction is being or could be compromised by present or impending weather conditions.

5.0 Measurement and Payment

- A. Quantities shown in the Bid Schedule for each bid item will be used as a basis for payment to the Contractor, unless said quantities are shown to the satisfaction of the Engineer.

- B. Payment will be made on each bid item for work completion. Each bid item shall include all labor, materials, equipment and incidentals used for a complete installation of the project and each bid item.

END OF SECTION

Section 02200 – Fence – Chain Link**1.0 Fabric**

Chain link steel wire shall be cold drawn 9 gauge and woven in 2-inch mesh. Then it shall be zinc coated by HOT-DIPPED PROCESS after weaving. Fasten the fabric to line posts approximately 14-inch intervals, top and bottom wire at approximately 24-inch intervals.

2.0 Line Posts

Hot-dip galvanized structural steel pipe 2-3/8" O.D. Posts shall be spaced in line of fence not farther apart than ten-foot centers.

3.0 End, Corner, Brace, Angle, Pull, Gate and Terminal Posts

Hot-dip galvanized, 2-7/8" O.D. with exception of gate posts. Gate posts shall be 3" O.D. and weigh 5.79 #/L.F. Corner braces shall be 1-5/8" O.D. All line posts shall be set in 30-inch concrete. All others shall be set in 36" concrete. These posts shall extend above the fence for attaching to the top barbed wire.

4.0 Fittings

All fittings used in fencing and gates shall be malleable and pressed steel.

5.0 Gates

Frames made of 2" O.D. pipe with 1-5/8" O.D. pipe diagonal bracing, hot-dip galvanized structural steel, corner fittings malleable. Fabric shall be the same as in the fence. Complete with pivot type hinges, catch and drop rods.

6.0 Wire

Supply three strands of 12½ gauge – four-point barbed wire with 45-degree arms on top of all line posts. Run seven-gauge non-marcelled wire at bottom of fence. Secure to corner or gate posts.

7.0 Top Rail

1-5/8" O.D. hot-dip galvanized structural steel pipe.

END OF SECTION

Section 02500 – Water Well**1.0 Drilling**

- A. General. Except as otherwise provided herein, the method of drilling the well shall be the Contractor's option but shall be subject to the approval of the Owner. The drilling method shall permit the Owner to obtain all of the data specified and shall result in an acceptable facility. The Contractor shall submit to the Engineer the proposed plan for drilling, completion and development including pump sizes. The Contractor shall follow the guidelines as established by the National Water Well Driller's Association.
- B. Drilling Fluids. Only clean potable water with a chlorine residual of at least 0.5 mg/L or water produced from the drilling operation shall be used in the drilling fluid. Only products acceptable for construction of public water supply wells shall be used for or added to the drilling fluid. Proper fluid viscosity must be maintained to control penetration of containments into the formation. The fluid shall be tested on an on-going basis to maintain the proper viscosity. The water pH should be maintained between 8.0 and 9.0. Soda ash may be required to adjust the pH.

Only commercial drilling fluid shall be used. Drilling with formation mud shall be prohibited in the production zone. A vibratory screen or multiple pits shall be used to separate formation materials from the drilling fluid. Formation deposits shall be removed from recirculation tanks frequently. The condition of the drilling fluid shall be maintained so as to minimize the losses to the formation. Slush pit(s) shall be constructed and maintained so as to minimize contamination of drilling mud.

- C. Bore Size. Except as otherwise specified, the size of the bore hole shall not be less than specified on the drawings.

The Contractor shall drill larger bores where he determines necessary for his operation.

If the Contractor drills a pilot bore for the purpose of collecting formation samples. The bit used for the pilot bore shall be no larger than 8-3/4 inches in diameter.

Where underreaming is required, the Driller shall perform a caliper log in the presence of the Owner and the Engineer to demonstrate that the bore is of the specified size prior to installing the screen.

- D. Formation Samples. When drilling the pilot bore through water bearing formations, the Contractor shall collect, record and preserve formation samples for examination by the Owner and for use in design of the well screen, gravel pack, etc. Separate samples shall be collected and analyzed at intervals not exceeding 20 feet.

The Contractor shall conduct his drilling operations and rates so as to ensure that good representative samples are obtained at known depths. The Contractor shall provide an acceptable means of diverting and separating the drill cuttings from a sufficient representative portion of the return flow to obtain an adequate sample volume for examination and analysis. Collecting samples from the return ditch shall not be acceptable. At intervals not exceeding twenty feet the progress of the bit shall be interrupted and the bore circulated until the return fluid is free of sand and cuttings. The bit shall then be advanced through the sample interval, or until a different formation character is detected and then stopped. Drill cuttings shall be continuously collected until the returns contain no cuttings. The samples shall be collected, placed in appropriate containers, labeled and stored for subsequent examination and analysis.

Drill cuttings for Blumberg Well No. 1 can be spread evenly across the site.

- E. Plumbness and Alignment. The well shall be constructed as straight as possible. The maximum allowable horizontal deviation of the well shall not exceed two thirds of the smallest inside diameter of the casing per 100 feet of depth (AWWA A-100-20 or latest version). The Contractor shall use sufficient drill collars and stabilizers to keep the bore hole straight and shall limit the weight on the bit and control the rate of bit advancement to keep the bore straight.

Tests to determine the plumbness of the pilot hole shall be made by the Contractor. To ensure drilling of wells to plumbness specifications, Contractor shall furnish and employ a self-checking mechanical drift indicator to measure hole deflection. Drift indications shall be taken at intervals of not more than 3 feet during drilling of all pilot holes and reamed holes. Mechanical drift indicator shall be an "Eastman-type" mechanical drift indicator, or equal. A 3-degree unit shall be used with indicator. Drift from vertical shall be not more than 0.75 degree for any reading. If test does not meet above criteria, Contractor, at his expense shall correct plumbness.

An analysis of drift indicator record shall be made periodically by Contractor and will be made as part of drilling log record. Four copies of alignment test results for each well shall be provided to Engineer, during drilling.

The final completed well shall be straight and shall pass a test with a 40-foot cylindrical dummy, with an outside diameter not less than 1 inch smaller than the inside diameter of the well casing. The dummy, when lowered into the well, shall pass without obstruction the entire depth of the casing. Failure to meet the maximum allowable horizontal deviation may be cause for rejection. The Driller shall be required to plug the well and to drill a new well at a location designated by the Owner at the Driller's cost.

- F. Continuance and Duration of Operations. From the time that the final borehole diameter for the casing commences until the casing has been pressure cemented, operations shall be continuous. In addition, from the time that the final borehole diameter for the screen (if applicable) commences up until the screen is in place

and filter pack set, operations shall be continuous. The Contractor shall conduct their operations and schedule their material deliveries and services so as to minimize the time that the drilling fluid stands in the bore hole in the production zone.

2.0 Geophysical Logs

The Owner may elect to conduct a geophysical log. If elected, the geophysical log shall be made by a commercial firm experienced in geophysical logging to verify the depth, thickness, and character of the water-bearing formations and salinity of the water. The geophysical logging shall be performed in the presence of the Hydrogeologist. The geophysical log shall be of the continuous trace type as follows:

A triple combo geophysical log; a caliper log shall also be run after completion of the borehole prior to setting the casing and again prior to setting the screen. The scale of the geophysical log shall be determined as dictated by the condition of the site geology.

Where underreaming is required, the Driller shall perform a caliper log in the presence of the Owner and the Engineer to demonstrate that the bore is of the specified size prior to installing the screen.

The Owner shall be provided with an electronic copy of each geophysical log.

3.0 Cementing

- A. General. The space between the casing and drill hole shall be sealed by using enough neat cement under pressure to completely fill and seal the annular space between the casing and the drill hole. The well casing shall be cemented in this manner from the top of the shallowest formation to be developed to the earth's surface. The driller shall utilize a pressure cementation method in accordance with the AWWA Standard for Water Wells (A100-20), Appendix C: Section C2 (Positive Displacement Exterior Method); Section C.3 (Interior Method Without Plug); Section C.4 (Positive Placement, Interior Method, Drillable Plug), and Section C.5 (Placement Through Float Shoe Attached to Bottom of Casing). A cement bonding log, as well as any other documentation deemed necessary, may be required to assure complete sealing of the annular space as required in §290.41(c)(3)(C) of the rules. The space between the casing and the drill hole shall be a minimum of three inches as required in §4.7.8.3 of AWWA A-100-20 standards.

The casing cement shall completely surround the casing to protect the casing from corrosion due to contact with the formation.

At least 48 hours prior to placing the casing cement, the Driller shall notify the Engineer or Hydrogeologist.

- B. **Materials.** Grouting materials shall conform to AWWA A-100-20 or latest version. Neat cement shall consist of a mixture of API Spec. 10, Class A or Class B and water in the ratio of not more than 6.0 gallons of water per 94-pound sack of cement *weighing approx. 118 lb/ft³*. A maximum of 6 percent, by *dry weight*, *unbeneficiated* bentonite and 2 percent, by weight, calcium chloride may be added *to the neat cement grout*. *With bentonite additive, the mixture of cement & water should begin at the base ratio of 5.2 g/sk of cement plus an additional 0.65 g/sk of cement for each 1% bentonite additive.* Class B (Type II) cement shall be used with high sulfate concentrations in the water.
- C. **Cement Quantity.** The Driller shall determine the quantity of cement to be used, but unless otherwise approved by the Engineer as stipulated herein, the quantity used shall comply with the following provisions. If a caliper log is run on the finished bore, the quantity of cement slurry used shall exceed the computed annular volume by at least thirty percent. If a caliper log is not run on the finished bore, the quantity of cement slurry used shall exceed the computed annular volume by at least fifty percent. With the Engineer's approval, the Driller may use less cement than stipulated above; however, the Engineer's approval shall not relieve the Driller of his responsibility to obtain all required results.
- D. **Pressure Grouting.** Prior to cementing, the bore shall be circulated until the return fluid contains no drill cuttings or formation slough.

The casing shall be pressure cemented from bottom of the casing, or other stipulated level, to the surface in accordance with the AWWA Standard for Water Wells (A100-15), Appendix C: Section C.2 (Positive Displacement Exterior Method); Section C.3 (Interior Method Without Plug); Section C.4 (Positive Placement, Interior Method, Drillable Plug); Section C.5 (Placement through Float Shoe Attached to Bottom of Casing) [30 TAC §290.41(c)(3)(C)]. Pumping and displacement of cement shall be continuous without interruption. Cementing shall produce clean cement returns at the surface as determined by the Engineer.

Pressure grouting shall be accomplished by a firm equipped for and experienced in performing such work.

At least 12 hours after the casing is cemented in place and before further drilling is begun, the Contractor shall immediately fill with cement slurry any cavity created by settling of the cement.

- E. **Cementer's Report.** The Cementer shall monitor the cementing operations and shall provide a complete report on TCEQ-20842 Form (TCEQ Cementing Certificate for PWS Groundwater Well Construction) to the Owner and the Engineer. The report shall provide complete details of the bore and casing size and

depths; cement slurry materials and properties; quantities used and a chart and graph of time, pumping rate, surface pressure, density and total volume pumped.

- F. **Cement Bond Log.** In the event that casing cementing is not accomplished according to all specified requirements, the Owner or the Engineer may require the Driller to provide a cement bond log to demonstrate whether or not the casing cement is sound. The bond log shall be a segmented log performed under the maximum pressure at the surface which occurred during the cementing operation, provided that such pressure would not cause the stress of the pipe material to exceed sixty-five percent of its yield stress. The bond log shall be performed by a party acceptable to the Owner and the Engineer. The Driller shall bear the cost of the bond log.
- G. **Rejection Due to Failure.** Failure to obtain clean cement returns to the surface or to otherwise obtain sound casing cement, in the opinion of the Engineer, shall be cause for rejection of the well. The Driller shall be required to plug the well and to drill a new well at a location designated by the Owner and at the Driller's cost.
- H. **Plugging.** At the direction of the Engineer or Hydrogeologist, the Contractor shall form cement slurry plugs to seal saline or other sour water bearing formations. Such plugs shall be for the purposes of preventing contamination of fresh water formations.

Cement slurry plugs shall be constructed in accordance with the requirements of the Texas Railroad Commission, Texas Commission on Environmental Quality and other regulatory agencies having jurisdiction.

4.0 Steel Pipe

- A. **Scope.** This specification shall cover steel pipe used for column pipe for the pump.
- B. **Materials.** All steel pipe used for this project shall be new pipe in good condition. All newly installed pipes and related products must conform to American National Standards Institute/NSF International (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.

All steel pipe shall be free of dents, excessive corrosion, or other damage or defects.

Unless otherwise approved by the Engineer, all steel pipe shall be standard mill pipe manufactured in accordance with ASTM A-53 or API 5L. Steel pipe shall be produced from steel having a yield stress of at least 48,000 psi. The full circumference of all resistance welded steel pipe shall be normalized after welding.

Except where otherwise required, steel pipe shall have beveled ends for welded connections. Where necessary for special connections, steel pipe for screen blank

shall have threaded or other suitable ends. Steel pipe used for pump riser columns shall have National Pipe Thread ends for threaded coupling connectors.

The casing material used in the construction of wells for public use shall be new carbon steel, high-strength, low-alloy steel, stainless steel or plastic. The material shall conform to AWWA standards. The casing shall extend a minimum of 18 inches above the elevation of the finished floor of the pump room or natural ground surface and a minimum of one inch above the sealing block or pump motor foundation block when provided. The casing shall extend at least to the depth of the shallowest water formation to be developed and deeper, if necessary, in order to eliminate all undesirable water-bearing strata. Well construction materials containing more than 0.25% lead are prohibited.

C. Pipe Thickness.

STEEL PIPE (O.D.)	MIN. WALL THICKNESS
26" Surface Casing	0.375"
16" Casing	0.500"
10 3/4" Column	0.365"

D. Welding. Welded joints for steel pipe shall be full penetration butt welds. All welds shall be made in accordance with American Welding Society Specifications so that the tensile strength of the joints shall equal or exceed the tensile strength of the pipe. All welds shall be made by qualified welders using suitable equipment, electrodes compatible with the casing materials, full penetration welds, avoidance of slag intrusion, and complete filling of the joint. Each joint shall be carefully aligned prior to welding. All intermediate passes shall be power tool ground to remove slag.

For welds not protected from corrosion by passivation by the casing cement, the welds shall be power tool brushed and capped.

The ends of all casing and liner pipe to be welded shall be square cut and beveled. A suitable bevel torch machine shall be used for all field cuts.

All welds shall be allowed to air cool at least fifteen minutes before being quenched by immersion in the drilling fluid.

E. Flange. Where flanges are required for steel pipe, they shall be AWWA Class B flanges.

5.0 Stainless Steel Pipe/Screen

- A. Pipe. Stainless steel casing/blank shall be constructed of Type 316L stainless steel.
- B. Screen Blank. The stainless-steel screen shall be constructed on a perforated stainless steel pipe (Type 316L). The pipe shall be perforated by ½” drilled holes, de-burred inside and out. The perforations shall be staggered and not more than 20 percent of the pipe shall be removed by perforation.
- B. Screen. The screen shall be fabricated from stainless steel conforming to ASTM 316. The screen shall be produced by wrapping a keystone shaped wire over and resistance welded to longitudinal ribs. The casing and screen shall be set with sufficient centralizers to keep the screened section in or as near as possible to the center of the bore hole or other prescribed positions.
- C. Screen Opening Size. The Contractor shall collect and deliver sand samples to the screen fabricator who shall analyze the samples and report the results to the Driller and Owner. The fabricator shall process the sand samples removing drilling mud, shale cutting or other foreign materials and then perform a sieve analysis.

Except as otherwise provided, the intake shall be designed as specified herein. For naturally developed wells, the screen opening shall pass between sixty percent and eighty percent of the formation material. For gravel packed wells, the filter pack shall be between six times and eight times greater than the mean formation particle size, and screen opening shall pass between ten percent and twenty percent of the filter pack.

Results of the sieve analysis shall be presented to the Owner and the Engineer. The Owner and Engineer shall have the prerogative of selecting the screen slot opening and the gravel pack size (if applicable), and the selected screen and gravel pack design may differ from the limitations given in this specification.

6.0 Cleaning, Development and Testing

- A. General. The Contractor shall clean, disinfect the gravel pack (if applicable), develop the well, and perform a 36-hour pumping test.

Cleaning, disinfection, development and pump testing shall be commenced immediately after installing the screen or drilling out the open hole section, whichever is applicable.

- B. Cleaning. Immediately after completing construction of the well, and prior to sealing the screen where applicable, the Driller shall wash through all sections of the screen or open hole section with clean water. Washing shall continue at a sufficient rate until the return stream is clear. The Driller may add up to one-half gallon of suitable polyphosphate, NAPCO 201, per 1,000 gallons to the wash water.

The Engineer may require the addition of other cleaning agents or disinfection agents.

During cleaning, the Driller shall add sufficient highly chlorinated water to the gravel pack (if applicable) within and above the production interval for disinfection. The Driller shall use a tremie pipe so as to produce a concentration of at least 100 mg/L of available chlorine. The chlorine shall be applied during cleaning in a manner so as to ensure that the chlorine is evenly dispersed.

The Contractor shall employ effective methods of removing all drilling fluids, shavings and fines from the production interval. The method used shall be subject to the Engineer's approval. Several methods of cleaning which shall be considered acceptable but not necessarily effective are: air lift pumping with an isolation tool, air lift pumping, pumping, over pumping, surging with a surge block, backwashing, scouring with a high velocity air or water nozzle, sonar jetting and treatment with chemicals such as detergents, hexameta-phosphate, acid, carbon dioxide or others. If the method used does not accomplish the necessary result, the Contractor shall employ alternate methods. Cleaning operations shall continue until the well is cleaned to produce less than 5 mg/L and to a sufficient degree to the satisfaction of the Engineer. As directed by the Engineer, the Contractor shall demonstrate that the discharge from the well will be free of drilling fluid, fines, etc. when backwashed or otherwise agitated.

- C. Development. The Contractor shall employ effective methods of developing the well subject to the approval of the Engineer and Hydrogeologist. Development shall continue until little or no drilling fluid, fines or sand is evident in the discharge and until the drawdown has stabilized, to the satisfaction of the Engineer and Hydrogeologist. Chlorine disinfection of the well shall continue through development.

The Contractor shall develop the well with air lift pumping with an isolation tool using a surge block at sufficient rates for a sufficient period to demonstrate development. Other methods may be proposed by the Contractor with approval by the Engineer.

If the static water level is too high for backwashing to be effective, the Contractor may be required to provide a water tank, piping and valves necessary for effective backwashing.

- D. Downhole Video Survey. Once the well has been thoroughly cleaned and developed, the Contractor shall perform a static video survey of the well. The video equipment shall be in good repair and suitable for the task required. The equipment shall accurately determine and record the depth of the camera from the top of the slab. The camera shall clearly illuminate, display and record the condition of the casing, liner, screens, seals and other components of the well, subject to passage

and water clarity. In addition to the downhole view, the camera shall be equipped with a 360° side view feature. The equipment shall be made and recorded in color.

The video shall be recorded on USB drive. The Contractor shall provide the Owner with two copies of the survey.

- E. Step Test and Pump Testing. Once development is complete and the downhole video survey is complete, the Contractor shall perform a step test consisting of three steps. The first step shall be at a rate of 1,200 gpm and maintained at that rate until a stable pumping level is achieved for a period of one hour. The second and third steps shall be at 1,600 gpm and 2,000 gpm again with a stable pumping level of one hour. A stable pumping level is defined by a straight line on a semilogarithmic plot of time versus drawdown.

Once the step test is complete, the Contractor shall allow the water level to recover fully to static water level and then perform a 36-hour drawdown and recovery test. Recovery shall commence until the water level reaches 90% recovery.

A pump capable of pumping at various rates up to at least 1,600 gpm at 370 feet total dynamic head and 1,770 rpm shall be provided for pumping of the well. The pump shall be set at a depth of at least 550 feet. The Contractor shall provide a suitable means of measuring the water level during development and the pumping test. A 1" PVC line shall be used during development and the pumping test to allow a water level meter or transducer to be placed within it for measurement of water level.

The Contractor shall pump the well at a continuous rate of 1,600 gpm for 36 hours. The pumping rate may be changed depending upon the well's capabilities.

The water level shall be measured with a pressure transducer to the nearest tenth of a foot at one-minute intervals throughout the length of the pumping and recovery phase of the test. Recovery data shall be taken until the well has recovered to at least 90% of the drawdown. The Contractor shall be responsible for measurement of water levels and pump rate for the test. Pump test data shall be provided to the Engineer and Hydrogeologist in a digital format with depth settings and water level reference data.

The Contractor shall measure and record the time, and discharge rate with a flow meter or other approved equal method. The discharge rate shall be recorded at 5-minute intervals for the first 30 minutes, at 10-minute intervals between 30 minutes and 2 hours and then at one-hour intervals for the remainder of the test.

At the end of the 36-hour drawdown period, the pump shall be shut off by the Contractor.

During the production period, the Contractor shall note and record the presence of any solid material in the discharge and any changes in color or clarity of the discharge.

At the end of the 36-hour drawdown period, the Contractor shall take a water quality sample and submit it to an approved laboratory for testing before shutting off the pump.

7.0 Disinfection and Bacteriological Testing

- A. Scope. This specification shall cover disinfection of the well after completion of all drilling, cleaning, development and hydraulic testing operations have been completed.
- B. General. The Contractor shall disinfect the well, gravel pack (if applicable) and all appurtenant equipment and piping in accordance with AWWA C654-13 or latest version standards and Texas Commission on Environmental Quality requirements. Disinfection shall make possible obtaining three consecutive negative bacteriological test results.
- C. General Procedure. The method of disinfection shall be the Contractor's option, provided the method employed conforms to AWWA standards, Texas Commission on Environmental Quality requirements, is acceptable to the Engineer and the Owner and achieves the required result.

The entire liquid volume of the well, including gravel packs and gravel reservoirs, shall be treated with sufficient chlorine so as to produce a concentration of at least 500 mg/L of available chlorine. The chlorine shall be applied in a manner so as to ensure that the chlorine is evenly dispersed. All surfaces and equipment above the water level shall be treated with chlorine water with a concentration of at least 500 mg/L of available chlorine. The entire well shall be treated simultaneously, and the disinfectant shall remain in the well for at least twenty-four hours.

If samples collected after disinfection show bacteriological contamination, the Contractor shall evenly apply throughout the well a volume of chlorine solution equal to the entire liquid volume of the well, including gravel packs and gravel reservoirs (if applicable), with a concentration of at least 1,000 mg/L of available chlorine.

All surfaces and equipment above the water level shall be re-treated with chlorine water with a concentration of at least 1,000 mg/L of available chlorine. The entire well shall be treated simultaneously, and the disinfectant shall remain in the well for at least twenty-four hours.

Disinfection operations shall be conducted with the test pump and be repeated until three consecutive negative bacteriological test results are obtained.

- D. **Disinfection Solution.** To account for partial solubility of chlorine substances, chlorine demand of the formation water and impurities in the well structure, the Contractor shall determine the amount of granular chlorine as at least 125 percent of that required for 100 mg/L of available chlorine, 1.6 pounds of calcium hypochlorite per 1,000 gallons of water. Likewise, the Contractor shall determine the amount of chlorine tablets as at least 200 percent of that required for 100 mg/L of available chlorine, 2.6 pounds of calcium hypochlorite per 1,000 gallons of water.
- E. **Dechlorination.** Dechlorination of disinfecting water shall be in strict accordance with current AWWA Standard C655-09 or most recent publication.

8.0 Water Quality Samples

The method of sample collection shall be subject to approval by the Owner and the Engineer.

- A. **Interim Water Quality Samples.** After completion of the cleaning and development operations and upon completion of the pump test, the Contractor shall collect representative water quality samples from the well and have them analyzed for the following constituents in accordance with the Texas Commission on Environmental Quality.

<u>Primary Constituents</u>	<u>Secondary Constituents</u>	<u>Additional Water Quality Parameters</u>
Nitrate	Aluminum	Alkalinity as CaCO ₃
Nitrite	Copper	Calcium as CaCO ₃
Arsenic	Iron	Sodium
Fluoride	Manganese	Free Ammonia**
	Zinc	Lead
	TDS	
	Sulfate	
	Chloride	
	pH*	

* In addition to a laboratory analysis of pH, a field test shall be conducted at the well head sample tap to determine the pH of the collected water sample.

** Free available ammonia (referred to as ‘free ammonia’) is a field test conducted by the Indophenol Method and is not to be confused with Total Ammonia, which also includes the portion that exists as ammonium (NH₄). There is no available accredited method for free ammonia and it is not listed as an “approved Drinking Water or approved Public Water System Lab” analyte on the agency’s Drinking Water Lab Approval Form:

<https://www.tceq.texas.gov/downloads/drinkingwater/form-10450-drinking-water-lab-approval.pdf>

Therefore, please note the following requirements for analyzing raw water free ammonia:

- Free ammonia must be analyzed in the field.
- Required test accuracy is plus or minus 0.1 mg/L.
- Ammonia is measured as free available ammonia as nitrogen.
- Check the range of sample kit. The upper limit of the most common kit is 0.55 mg/L. Sample results above that level should be diluted and reanalyzed.
- Follow all instructions provided by the field test kit manufacturer.

Samples shall be collected according to the laboratory's directions and in sample containers prepared and provided by the laboratory. All chemical, microbiological and radionuclide analysis shall be performed by a TCEQ accredited laboratory that is approved to run the specific test.

- B. Bacteriological Samples. The Contractor shall collect and have analyzed three consecutive daily bacteriological samples in accordance with the Texas Commission on Environmental Quality samples with the test pump. The Contractor shall continue sampling and disinfection operations, if necessary, until three consecutive passing bacteriological samples are obtained.

The residual chlorine concentration shall be obtained via a field test at the well head sample tap with the concentration noted on the laboratory form.

END OF SECTION

Section 03000 – General

1.0 Cast-In-Place Concrete

This specification shall cover cast in place concrete where shown on the drawings or specified herein.

2.0 Applicable Standards

All concrete used in the course of this work shall conform to the requirements of ASTM C-94, latest version, “STANDARD SPECIFICATIONS FOR READY-MIXED CONCRETE.”

All reinforced concrete structures shall be constructed in accordance with BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE STRUCTURES, ACI-318.

3.0 Materials

Cement used shall be Type II (Class B) Portland Cement and shall conform to the requirements of the current specifications for Portland Cement, ASTM Designation C-150.

All concrete aggregates shall be clean, hard, siliceous material conforming to the requirements of ASTM C-33.

Fly ash used to substitute for cement shall conform to ASTM C-618.

All water used for concrete and for curing shall be potable water.

All reinforcing steel shall be deformed steel bars conforming to the request of ASTM A-615, Grade 60. Reinforcing steel shall be free from excessive rust scale, loose mill scale, other objectionable matter that could inhibit the bonding or cutting of concrete to the steel.

Admixtures shall be in a liquid state and conform to the following requirements:

- A. Chemical Admixtures: ASTM C-494
- B. Air Entraining Admixtures: STM C-260

Waterstops shall be six-inch heavy duty polyvinyl waterstop as manufactured by Water Seals, Inc. of Chicago, Illinois, six-inch x 18 gauge sheet steel or approved equal.

Expansion joint filler shall conform to ASTM D-544 and joint sealing material shall be of the hot-poured type conforming to Federal Specification SS-S-164, unless a specified type of filler or sealing material is called for on the Drawings.

4.0 Mix Design

Except where otherwise required or permitted, all concrete used for the project shall have the characteristics specified herein. The Contractor shall submit proof tests of the mix design which substantiate compliance with this specification.

The concrete shall have a 28-day compressive strength of 3,600 psi. The minimum cement content shall be 6 sacks per cubic yard and the water/cement ratio shall not exceed 6 gallons per sack. Fly ash may be substituted for not more than 20 percent of the required cement. The slump shall be between 3 and 4 inches.

The coarse aggregate size shall be sufficiently small to avoid screening, honeycombing or voids in the concrete.

Except as otherwise required, the maximum aggregate size shall not exceed 1/5 the narrowest dimension between the sides of forms or 3/4 of the clear spacing between reinforcing bars. The maximum nominal aggregate size shall not exceed 1 1/2-inches.

The concrete shall have an entrained air content of 4 1/2 to 5 percent.

A water reducing agent, with set retarder may be used at a rate recommended by the supplier for concrete poured in the summer, or when the high temperature exceeds 85 degrees F. The admixture shall be similar to "POZZOLITH 300R" or approved equal.

A water reducing agent may be used at a rate recommended by the supplier for all concrete poured in the winter, or when the low temperature drops below 50 degrees F. The admixture shall be similar to "POZZOLITH 300N" or approved equal.

Neither calcium chloride nor admixtures containing calcium chloride shall be added to the concrete.

5.0 Mixing

Except where otherwise required or permitted, all concrete shall be ready-mixed concrete manufactured and delivered in accordance with the requirements of ASTM Specification C-94, "Standard Specifications for Ready-Mixed Concrete."

Water shall not be added to the concrete mix more than 60 minutes before placing. When the air or concrete temperature is 90 degrees F. or higher, water shall not be added to the concrete mix more than 45 minutes before pouring. Water shall not be added to extend the life of the concrete.

6.0 Form Work

Forms may be of wood or metal, and shall have sufficient rigidity and structural integrity to assure that the finished structure will be true to line, grade, shape, and finish as shown on the drawings. All forms, at the time of placing of concrete, shall be free of dirt, excessive oil, and any other foreign material which may be injurious to the finish or strength of the concrete. Form release agents may be applied to the forms.

All forms shall be braced, blocked and otherwise supported to prevent movement, slippage, or distortion during placement and curing of the concrete. All concrete placed in forms which move, slip or distort during placement shall be considered unacceptable. The Contractor shall remove and replace all unacceptable concrete.

Side forms for foundations placed below the existing grade and at least 6 inches below finish grade may be deleted. Where side forms are deleted, the foundation shall be extended to the edge of the excavation.

All embedded items, such as piping, sleeves, electrical conduit and similar items, shall be securely positioned, tied and insulated where required so that no movement will occur while the concrete is being placed.

Except as otherwise required or permitted, forms shall remain in place for at least thirty hours after the concrete has set. Where concrete is supported by false work, forms shall not be removed for at least seven days after the concrete has set. All forms shall be removed prior to backfilling around structures.

7.0 Reinforcing Steel

The Contractor shall place reinforcing steel to the dimensions and arrangements shown on the drawings. The tolerance on placing reinforcing steel shall be $\frac{1}{4}$ inch from the required position.

Reinforcing steel shall be cut, bent and otherwise fabricated in accordance with ACI-318. Reinforcing steel shall be placed in the forms and securely tied to remain rigid without movement or deformation during concrete pouring.

Except as otherwise required, reinforcing for flexural members shall have the minimum concrete cover required by ACI-318. Reinforcing of concrete exposed to wastewater, wastewater sludges or otherwise corrosive materials or the off gases from such materials shall have 3 inches of concrete cover.

Except as otherwise required or permitted, splices shall not be less than thirty bar diameters in length.

8.0 Placing Concrete

Prior to pouring concrete, the Contractor shall check the construction drawings, specifications, submittals, etc. to ensure that all pipes, conduits, anchor bolts and other items to be embedded in the concrete are in place at the proper position and thoroughly secured. Prior to pouring concrete, the Contractor shall check to insure that all reinforcements have been properly placed. At least forty-eight hours prior to pouring, the Contractor shall give notice so that the Engineer may observe the work prior to pouring.

Concrete shall not be poured when the air temperature is 35 degrees F. or lower or when the air temperature is 40 degrees F. and falling. Concrete shall not be poured when rain is falling, and the surface of fresh concrete shall be protected from rain damage.

The concrete is to be placed as near as possible to its final position, and the use of a vibrator to make the concrete flow will not be permitted.

The Contractor shall provide runways, ramps and other facilities required for properly placing the concrete without traveling over the reinforcements with buggies or other conveyances. Chutes, tremies, hoppers or other placing devices are to be used to prevent the concrete from free-falling more than three (3) feet.

Once placed in the forms, concrete shall be thoroughly consolidated by tamping, rodding, vibrating or other suitable manner so as to prevent voids or honeycombing of the finished structure. Use of vibrators shall be limited to prevent segregation of the mix components.

All concrete shall be placed continuous between construction joints. The Contractor shall perform adequate planning, coordination with the concrete supplier, and have sufficient labor, equipment and tools at the site to prevent cold joints in the concrete structures.

Construction joints shall be made at locations shown on the Drawings or specified herein. Except for small slabs or structures, the Contractor may make additional construction joints with the approval of the Engineer.

Finished edges and corners of all structures shall have a $\frac{3}{4}$ inch chamfer. The finished edges of all slabs shall be chamfered.

9.0 Finishing and Curing

After placement of concrete, all wooden forms are to be kept moist to prevent adsorption of water from the concrete.

Unless otherwise noted on the Drawing, exterior surfaces shall be given a wooden flat finish after the concrete has been brought to the proper level and struck off with a straightedge. Exterior formed surfaces which will be exposed are to be given a rubbed finish by wetting the

concrete surface after forms are removed and rubbing the surface with a carborundum stone until a smooth and uniform texture is achieved.

All finishing and repair work shall be done before any curing material, except water, is applied to the surface of the concrete. Curing shall begin immediately upon completion of finishing operation, and shall continue for a minimum of 4 days.

The Contractor shall employ one of the following methods of curing. Forms may be left in place and kept moist for the required period. Wet mats may be used. Slabs may be cured by ponding.

10.0 Testing, Defects and Remedies

All concrete work shall be performed so as to produce a finished structure having the intended shape, strength and water tightness indicated on the Drawings and specified herein. One concrete test cylinder is required per each 50 cubic yards poured.

Where required by the Engineer, the Contractor shall remove and replace concrete which does not meet the specified compressive strength.

Where moderate amounts of honeycombing are evident and such honeycombing will not affect the integrity of the structure, the Contractor shall repair the concrete. A rich cement mortar grout shall be used to fill the cavities. Where water-tight structures are to be repaired, a non-shrink grout shall be used. Where the Engineer determines the honeycombing will affect the integrity of the structure, the Contractor shall remove and replace the concrete.

Water-tight structures shall be completely water-tight. The Contractor shall test all such structures by filling with clean water prior to backfilling and observing for leaks. The Contractor shall repair all leaks at honeycombing, cold joint, water stops, insets and all other leaks to the satisfaction of the Engineer. Repairs shall be made in a manner acceptable to the Engineer. Pressure injection of epoxy, special grouts or other seals shall be considered by the Engineer on a case by case basis. If necessary, the Contractor shall remove and replace defective concrete.

11.0 Non-Shrink Grout

Where specified, the grout shall be non-metallic, non-shrink grout containing specially selected silica sands, cement shrinkage compensating agents, and plasticizing and water reducing agents. Grout shall conform to the requirements of THE CORPS OF ENGINEER'S CRD-C-588. Grout shall be installed per manufacturer's recommendation.

END OF SECTION

Section 11000 - General

1.0 Description

This division shall consist of, but is not limited to, furnishing, fabrication and/or installing the following equipment.

- A. Oil-Lubricated Vertical Lineshaft Pump
- B. E-line and Vent.

END OF SECTION

Section 11310 – Oil Lubricated Vertical Lineshaft Pump

1.0 General

This specification covers a deep well lineshaft turbine pump with above ground discharge, arranged for oil lubrication of the lineshaft bearing by a manual or electric assembly and furnished with suitable driver and accessories as specified herein. The pumping unit shall be designed and furnished in accordance with the latest Hydraulic Institute and AWWA Standard for lineshaft turbine pumps.

The manufacturer of the pump and motor shall have a service shop in the San Antonio, Texas area. The manufacturer shall have been in business for a minimum of five (5) years with similar type and size pumps. The pumps and motors shall be factory assembled and tested. The pump shall be supplied only by a factory authorized dealer who shall comply with all factory requirements and policies. The Engineer may require that submittals be executed by an officer of the manufacturer.

No piece of equipment or components of the pump or motor shall contain more than a weighted average of 0.25% lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fixtures and fixtures and meet standards of NSF 61.

The Owner may elect to defer installation of the pump until other proposed facilities for delivery of the water to the existing distribution system are complete. The pump shall be designed and constructed to operate satisfactorily with a reasonable service life, when installed in a typical continuous turbine pump application.

2.0 Operating Conditions

For bid purposes, the pumps shall be designed for pumping water at:

Blumberg Well No. 1:

Rated capacity	1,600 GPM
Total dynamic head	496 FT.
Minimum bowl efficiency	75%
Water temperature	78°F.
Specific Gravity	1.0
Minimum motor size	300 H.P.
Voltage	460 VOLT
Phase	Three

Pump shall not be ordered until the Engineer has confirmed the operating conditions.

3.0 Pump Construction

Unless otherwise stated herein, the pump shall in all respects conform to the AMERICAN NATIONAL STANDARD ANSI-E-101 for “VERTICAL TURBINE PUMP, LINE SHAFT TYPE” and shall comply with all local and state sanitary and safety regulations. The pump bowls, and oil tube (O.D.) shall be coated with tnemec 21 (12 mil coating).

- A. **Bowl assembly:** The bowls shall be flanged type constructed of close-grained cast iron conform to ASTM A48, class 30. They shall be free from sand holes, blowholes, or other faults and must be accurately machined and fitted to close tolerances. The intermediate bowls shall have enamel or epoxy lined waterways for maximum efficiency and wear protection. All intermediate bowls shall be of identical design for interchangeability. An oil lubricated adapter with drain ports and adapter bearing shall be used to connect the intermediate bowl to the enclosed column assembly. An extra-long bronze throttle bushing shall be used in the top intermediate bowl and oil lube adapter to minimize the amounts of water leakage through the drain ports. Drain ports are to be provided with sufficient area and shape and angle to permit a non-horizontal escape of water that passes through the throttle bushing. All bowls shall be fitted with sleeve type bearing of bronze alloy C89835 or fluted rubber.
- B. **Impellers:** The impellers shall be constructed from ASTM B584 silicon bronze and shall be the enclosed (or semi-open) type. They shall be free from defects and must be accurately cast, machined for optimum performance and minimum vibration. Impellers shall be balanced to grade G6.3 of ISO 1940 as minimum. They shall be securely fastened to the bowl shaft with taper locks of C1018 steel.
- C. **Suction:** The suction bowl shall be provided with a non-soluble grease packed bronze bearing. A bronze sand collar shall be provided to protect this bearing from abrasives in the pumping fluids. The bearing housing shall have sufficient opening at the bottom for easy removal of the bearing.
- D. **Shaft:** The bowl shaft shall be constructed from ASTM A582 type 416 stainless steel. It shall be precision ground and polished with surface finish better than 40 RMS.

4.0 Column Assembly – Oil Lubricated

- A. **Column pipe:** The column pipe shall be furnished in sections not exceeding a nominal length of 20 ft. The column pipe shall be 10” carbon steel pipe. The pipe ends shall be machined with 8 threads per inch with 3/16 taper and faced parallel to butt against subsequent column pipes. Inside diameter of the pipe shall be such that the head losses shall not be over 5 feet per 100 feet of pipe. The pipe shall be

connected with threaded sleeve type steel couplings. The pipe shall be coated with with tmemec 21 (12 mil coating).

- B. **Enclosing Tube:** The enclosing tube shall be made of ASTM A120 schedule 80 pipe in interchangeable section not more than 5 ft. in length. The top special section shall be designed for applying proper tension to the tube. Both ends of each tube length shall be bored, faced, and inside threaded with left hand threads. The ends of the tube shall be square with the axis and shall butt to ensure accurate alignment. The tube shall be of such overall assembled length to properly match the length of the discharge column. The enclosing tube shall be stabilized in the column pipe by rubber centering spider spaced 20 feet from the top and bottom, and 40 feet intervals throughout the balance of the column length.
- C. **Bearings:** The lineshaft bearing which serves as a coupling for the shaft tubing shall be spaced at each tube length, to maintain alignment of pump shafting and to prevent excessive vibration. They shall be of bronze material and machined, threaded and grooved for proper lubrication.
- D. **Lineshaft:** The lineshaft shall be of carbon steel, ground and polished with surface finish not to exceed 40 RMS. They shall be furnished in interchangeable section not over 20 feet in length, and shall be coupled with threaded steel couplings machined from solid steel bar. It shall have left-hand threads to tighten during pump operation. The diameter of the shaft and coupling shall be designed in according with AWWA E101 Standard.

5.0 Discharge Head Assembly – Oil Lubricated

- A. **Discharge Head:** It shall be of the high-profile type to allow shaft coupled above tension plate/tension nut assembly and provided for mounting the driver and support the column and bowl assemblies. It shall be of ductile iron, A536 Grade 65-45-12, high-grade cast iron, ASTM A48 Class 30, or fabricated steel. The above ground outlet shall be flanged to match 8-inch ANSI class 125 (for cast iron) or class 150 (for ductile iron or steel). It shall have a 1/2" NPT connection for a pressure gauge.

A tension plate and tension nut assembly shall be installed in the discharge head to allow proper tension to be placed on the shaft enclosing tube. The tension plate nut shall be of cast iron with O-ring at the bottom end to provide the seal. The tension nut/bearing shall be made of silicon bronze to maintain tube tension and support for the head shaft. After proper tensioning, the tension nut shall be locked into position by a steel cap screw.

6.0 Suction Pipe and Strainer

The suction pipe shall be 10 feet in length and shall have a minimum inside diameter and weight equal to or larger than that of the discharge column pipe. A suitable cone strainer of galvanized steel shall be provided having a free area of at least five times the flow area of the suction pipe.

7.0 Electric Motor

The motor shall be a heavy-duty squirrel cage induction type, NEMA Class B, 1,770 RPM vertical hollow shaft motor, with a non-reverse ratchet to prevent reverse rotation of the rotating elements. A thrust bearing of ample capacity to carry the weight of all rotating parts plus the maximum hydraulic thrust load under all conditions of operation calculated L10 life shall be no less than 8800 hours. The motor shall be premium efficiency, 1.15 service factor, and suitable for use on 460 volts, three phase, 60 Hz electric service. An adjusting nut shall be provided at the top of the motor for setting the impeller to bowl running clearance.

The motor rating shall be such that it will not be loaded beyond nameplate rating at any place on the pump curve.

8.0 Manufacturer

The pump shall be manufactured by National Pump, Xylem, Inc., Flowserve, PGI, or approved equal. The motor shall be General Electric, U.S. Motors, or approved equal.

9.0 Miscellaneous

- A. The manufacturer shall guarantee the maximum amplitude vibration shall not exceed the HYDRAULIC INSTITUTE recommendations.
- B. The pumps shall be field tested by the Owner after installation to determine that guarantees have been met.
- C. The pump manufacturer shall be responsible for satisfying himself that the motors proposed will operate as specified and will mate properly with the pumping units.

10.0 Variable Frequency Drive

This specification describes the features and design of a low-harmonic variable frequency drive (VFD) for operating three-phase electric motors from either a single-phase or three-phase source. The VFD shall draw current and voltage from the utility source in a sinusoidal manner with low total harmonic distortion (THD). The input stage shall also employ electronic power factor correction to maintain near unity power factor while operating loads. The VFD shall comply with IEEE 519-2014, the standard for allowable harmonic distortion on utility mains, to maintain power

quality for other utility customers and prevent damage to or interference with utility equipment, such as distribution transformers and smart meters. The VFD shall have a soft-start feature to reduce current in-rush and line disturbance when starting motor loads.

The Variable Frequency Drive shall be manufactured by Phase Technologies, Yaskawa, or approved equal.

A. Qualifications

The VFD shall be designed in accordance and comply with:

1. National Electrical Code (NEC)
2. Underwriters Laboratories (UL) Standard 61800-5-1
3. FCC Article 15, Section J
4. IEEE 519-2014

B. Manufacturing and Quality Assurance

1. All sheet metal, printed circuit boards, inductors, and wires shall be manufactured in Rapid City, SD, USA;
2. The VFD shall be manufactured in the USA;
3. All printed circuit boards shall have a full functional test before being assembled in the VFD. The VFD shall then be subjected to a full-load test.

C. Submittals

1. The submittals shall include the following information:
 - a. Wiring diagrams for power and control wiring;
 - b. Cabinet drawings showing dimensions, weights, mounting details, and required clearances;
 - c. Complete technical product description;
 - d. Product certificates shall be provided by manufacturer when requested.

D. VFD Design and Function

1. The VFD shall be based on a double-IGBT conversion design, with an active switching module in series with an L/C filter rectifying the incoming AC power to DC. The input module shall draw input current in a sinusoidal fashion with a power factor near unity. Total Harmonic Distortion (THD) of the input current shall be less than 5% (based on operation of a linear load) measured at 50% or greater of full load. The output module shall be a three-phase IGBT inverter that produces a three-phase pulse-width-modulated (PWM) voltage for operation of AC motor loads.
2. Automatic VFD operating functions shall include:
 - a. Normal Operation: The VFD shall be equipped to accept analog or digital motor control signals for automatic operation of motor loads

and shall be equipped to operate in manual mode, overriding automatic motor control.

- b. Protective Functions: The VFD shall have the ability to automatically shut down to protect both the VFD and the load from damage. A graphic display shall allow the operator to identify the reason for shutdown from a variety of faults including:
 - a. Internal short in the VFD;
 - b. Overheating of the VFD (thermal overload);
 - c. Low utility line voltage;
 - d. Short between the output lines;
 - e. Excessive load demand;
 - f. High utility line voltage;
 - g. Line to ground fault;
3. Automatic Restart Delay: The VFD shall be equipped with an adjustable restart time delay to prevent all loads on the utility from restarting simultaneously when power returns after an outage.

E. Control I/O

1. A minimum of two discrete, programmable, inputs shall be provided;
2. Minimum of two 120VAC, 0.5 Amp rated programmable relays shall be provided;
 - a. All relays shall be programmable to perform at minimum the following functions:
 - a. General warning and fault conditions;
 - b. Provide reference of minimum speed being reached;
 - c. Allow the system to operate in Lead/Lag.
3. Minimum of two analog 4-20mA inputs that will allow proportional speed control or PID constant pressure control;
4. Minimum of one 0-5VDC input that will allow for proportional speed control.

F. Specifications

1. The VFD shall operate continuously at full output without de-rating while subjected to ambient temperatures of 0° to 50° C.
2. The VFD shall operate continuously at full output without de-rating at elevation up to 5,000 feet MSL. VFD must be de-rated 5% for every 1,000 feet gain in elevation over 5,000 feet.
3. Input Current Characteristics:
 - a. The VFD shall operate at near unity power factor.
 - b. Input current shall be true sinusoidal and contain less than 5% total harmonic distortion (THD).
 - c. Input Voltage Range: The VFD shall operate from 1Φ or 3 Φ, 50/60 Hz, nominal 240V or 480V.
4. Output Power Characteristics:
 - a. The 3Φ output shall be variable voltage, variable frequency, pulse-width-modulated voltage
5. Efficiency: The VFD shall operate the rated load at 95% efficiency.

G. Physical Requirements

1. Cabinet Construction: The enclosure shall be constructed with painted galvanized (A60) steel and galvanized (G90) steel, 0.039 in. (1.0 mm) minimum thickness.
2. Enclosures will be provided with hanging brackets. An optional floor-mount kit can be purchased for some systems.
3. Corrosion Protection: All parts shall be of corrosion resistant material or plated or painted as corrosion protection.
4. The VFD shall be supplied in an indoor NEMA Type 1 or outdoor rainproof NEMA Type 3R enclosure.
5. Electrical Connections: The VFD shall include input and output terminals for hard-wired connections. The enclosure shall provide an area suitable for input and output conduit openings.

H. Warranty

1. The manufacturer shall guarantee the VFD to be free from material defects and workmanship for a period of two years from purchase.

VFD shall not be ordered until the Engineer has confirmed the operating conditions.

END OF SECTION

Section 11400 – E-Line and Vent

1.0 E-Line Assembly

Each well shall be equipped with a 1-inch PVC pipe for checking water levels (E-Line). The PVC pipe shall include a water-tight cover that can be readily opened and closed. The line shall be 1-inch PVC extending down to the pump and strapped to the column pipe with stainless steel straps. A cap shall be placed at the base and perforations on the bottom 20 feet.

2.0 Vent

The well head shall be fitted with a 2” galvanized steel breather vent turned down and screened with 16 mesh stainless steel screen wire. The vent shall be installed at a minimum of 18 inches above the ground surface.

END OF SECTION

Section 15000 - General

1.0 Description

This division shall consist of, but is not limited to furnishing, fabrication and/or installation of the following:

- A. Ductile Iron Pipe and Fittings
- B. Steel Pipe – Water
- C. Polyvinyl Chloride (PVC) Pipe and Fittings – Water
- D. Testing and Disinfection
- E. Gate Valves
- F. Check Valves
- G. Combination Air Release and Vacuum Valves
- H. Water Meters – Propeller

2.0 Applicable Publications

The most recent issue of the following standard specifications, references or publications shall be a part of these specifications. The Contractor shall construct the project in general conformance with these standards with the additions, exceptions or other modifications indicated on the Drawings or specified herein.

- A. AWWA STANDARDS, Current Published, American Water Works Association (AWWA) and/or American National Standards.
- B. Chapter 290 Subchapter D RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS, Current Texas Commission on Environmental Quality Standards.

END OF SECTION

Section 15100 – Ductile Iron Pipe and Fittings**1.0 General****A. SCOPE.**

This specification shall cover furnishing and installation of ductile iron pipe and fittings where shown on the Plans.

B. APPLICABLE PUBLICATIONS.

The most recent issue of the following standard specifications or publication shall be a part of this specification.

AWWA STANDARDS, Current Published, American Water Works Association (AWWA) and/or American National Standards as follows:

1. C104/A21.4 Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.
2. C105/A21.5 Polyethylene Encasement for Ductile Iron Piping for Water.
3. C110/A21.10 Ductile Iron and Gray Iron Fittings 3 inches through 48 inches.
4. C111/A21.11 Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.
5. C115/A21.15 Flanged Ductile Iron Pipe with Threaded Flanges.
6. C150/A21.50 Thickness Design of Ductile Iron Pipe.
7. C151/A21.51 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water.
8. C153/A21.53 Ductile Iron Compact Fittings 3 inches through 16 inches for Water.
9. C600 Installation of Ductile Iron Water Mains and their Appurtenances.
10. C900 Underground Service Valves and Fittings.

2.0 Materials

- A. Ductile iron pipe shall be manufactured in accordance with ANSI A21.51.
- B. Except where otherwise required, all ductile iron pipe shall be Pressure Class 350. Where ductile iron pipe is to be fabricated to accept threaded flanges, the pipe shall be Thickness Class 53.
- C. All ductile iron pipe shall have a centrifugally applied cement-mortar interior lining conforming to ANSI A21.4.

- D. Except where otherwise required, the exterior of all ductile iron pipe shall have an asphaltic coating. Where ductile iron pipe is to be painted, the asphaltic coating shall be eliminated and the pipe shall be shop primed, or the asphaltic coating shall be completely removed by blast cleaning or other suitable means and a prime coat shall be applied.

3.0 Fittings

- A. Shall be ductile iron fittings which meet the requirements of ANSI A21.10 or shall be compact ductile fittings conforming to ANSI A21.53.
- B. Pipe fittings shall have a minimum internal working pressure of 350 psi.
- C. Except where otherwise specified all ductile iron fittings shall have an interior and exterior asphaltic coating. Where ductile iron fittings are to be painted, the asphaltic coating shall be eliminated and the fittings shall be shop primed, or the asphaltic coating shall be completely removed by blast cleaning or other suitable means and a prime coat shall be applied.

4.0 Joints

- A. GENERAL.

Joints for ductile iron pipe and fittings shall be of the type shown on the Drawings or as specified herein. All buried joints shall be bell and spigot or mechanical with restrained type gaskets. All ductile iron fittings shall be blocked, supported or otherwise restrained to resist the internal pressures which will be applied.

- B. BELL AND SPIGOT JOINTS AND MECHANICAL JOINTS.

Shall be in accordance with ANSI A21.11. Glands for mechanical joints shall be manufactured restrained type from ductile iron. Gaskets shall be manufactured from new synthetic rubber materials.

- C. FLANGES.

Except as otherwise provided, shall conform to the requirements ANSI A21.15 and ANSI B16.1, 125 pounds. Gaskets shall be manufactured from new synthetic rubber materials.

Except where otherwise stipulated, flanged pipe shall be fabricated with threaded flanges conforming to AWWA C115. Unless otherwise required, threaded flanges may be manufactured from grey iron or ductile iron.

D. RESTRAINED JOINTS.

All restrained joints shall be of a type acceptable to the Engineer. Restrained joints shall resist tension along the pipe equal to the force created by the internal pressure acting on the area of a circle with a diameter equal to the outside diameter of the pipe. For 16-inch and smaller pipe, the internal pressure shall be 350 psi and for 18-inch and larger pipe, the pressure shall be at least 250 psi. Where joints which score or bite into the barrel of the pipe are used, the Engineer may require Pressure Class 350 pipe. All fittings shall be restrained with EBAA IRON, Inc. Series 1100 Mechanical Joint Restraints, or approved equal.

5.0 Installation

- A. All ductile iron pipe, fittings and appurtenances shall be installed in strict accordance with the Manufacturer's recommendations, recommendations of American Water Works Association and the and the requirements shown on the Drawings and specified herein.
- B. All ductile iron pipe shall be blocked, supported and otherwise restrained to carry the weight of the piping, prevent movement and prevent joint separation.
- C. All buried ductile iron pipe and fittings shall be wrapped with 8-mil polyethylene and sealed in accordance with AWWA C105. The polyethylene wrap shall be secured with suitable tape.

6.0 Painting

- A. All exposed ductile iron pipe and fittings shall be painted in accordance with the Plans and/or Division 09 of these Specifications, whichever is applicable.
- B. All surfaces that are to be painted shall be prepared and coated in accordance with the stipulations given in Division 09 of these Specifications and with the Paint Manufacturer's recommendations.
- C. All paint shall be manufactured by TNEMEC or unless otherwise approved by the Engineer.

END OF SECTION

Section 15150 - Steel Pipe - Water**1.0 Scope**

This Section covers water lines constructed as shown on the Plans. Steel pipe used for the water lines shall conform to the standards set forth herein.

2.0 Applicable Publications

The most recent issue of the following standard specifications, references or publications shall be a part of these specifications. The Contractor shall construct the project in general accordance with these standards with the additions, exceptions or other modifications indicated on the Drawings or specified herein.

AWWA Standards, Current published (AWWA and/or ASTM) as follows:

1. ASTM A-53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. API 5L Specification for Line Pipe.
3. NSF Standard 61 Drinking Water System Components – Health Effects.

3.0 Materials

A. Raw Materials.

All steel pipe used for this project shall be new pipe in good condition. Pipe shall be free of dents, excessive corrosion, or other damage or defects.

Unless otherwise approved by the Engineer, all steel pipe shall be standard mill pipe manufactured in accordance with ASTM A-53, Type E, Grade B.

Steel pipe shall be produced from steel having a yield stress of at least 48,000 psi. The full circumference of all resistance welded steel pipe shall be normalized after welding.

Except where otherwise required, steel pipe shall have beveled ends for welded connections. Where necessary for special connections, steel pipe shall have threaded or other suitable ends.

The materials used for manufacture of the pipe and fittings shall meet the NSF Standard No. 61 for potable water use.

B. Welding.

Welded joints for steel pipe shall be full penetration butt welds. All welds shall be made in accordance with American Welding Society Specifications so that the tensile strength of the joints shall equal or exceed the tensile strength of the pipe. All welds shall be made by qualified welders using suitable equipment, electrodes compatible with the materials, full penetration welds, avoidance of slag intrusion, and complete filling of the joint. Each joint shall be carefully aligned prior to welding. All intermediate passes shall be power tool ground to remove slag.

The ends of all steel pipe to be welded shall be square cut and beveled. A suitable bevel torch machine shall be used for all field cuts.

All welds shall be allowed to air cool at least fifteen minutes.

Where flanges are required for steel pipe, they shall be AWWA Class B flanges.

4.0 Storage and Installation

The storage and installation of the steel pipe shall be in strict accordance with AWWA M11 specifications and manufacturer's procedures and recommendations. Installation shall also conform to all local plumbing, building, and fire code requirements

END OF SECTION

Section 15200 - Polyvinyl Chloride Pipe and Fittings – Water**1.0 Scope**

This Section covers polyvinyl chloride (PVC) pipe and fittings where shown on the drawings or specified herein.

Polyvinyl chloride pipe used for the proposed yard piping shall conform to ASTM D2241, SDR 21, Pressure Class 200 psi.

2.0 Applicable Publications

The most recent issue of the following standard specifications, references or publications shall be a part of these specifications. The Contractor shall construct the project in general accordance with these standards with the additions, exceptions or other modifications indicated on the Drawings or specified herein.

AWWA Standards, Current published (AWWA and/or ASTM) as follows:

1. AWWA C-900 PVC Pipe, 4 inches through 12 inches.
2. AWWA C-905 PVC Pipe, Nominal Diameters 14 inches through 48 inches.
3. AWWA C-909 PVC Pipe, 6 inches through 16 inches.
4. ASTM D-1784 Standard Specification for PVC Compounds and Chlorinated PVC Compounds.
5. ASTM D-3139 Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
6. ASTM F-477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
7. ASTM F-1483 Standard Specification for Oriented PVC Pressure Pipe.
8. ASTM D-2241 Performance Requirements – Standard Specification for PVC Pressure Rated Pipe (SDR Series), 2 inches through 12 inches.
9. ASTM D-2274 Standard Practice for Underground Installation of Thermoplastic Pressure Piping.
10. ASTM D-2855 Standard Practice for Making Solvent Cemented Joints with PVC Pipe and Fittings.
11. ASTM D-1785 Standard Specification for PVC Pipe, Schedules 40, 80, and 120.
12. NSF Standard 14 Plastic Piping Components and Related Materials.
13. NSF Standard 61 Drinking Water System Components – Health Effects.
14. UNI-B-8 Recommended Practice for the Direct Tapping of PVC Pressure Water Pipe, 6 inches through 12 inches.

3.0 Materials

A. Raw Materials.

All PVC pipe shall be made of compounds conforming to ASTM D-1784 with a cell classification of PVC 12454A or PVC 12454B.

Pipe for water use shall be blue in color. All pipe and fittings shall be manufactured in the United States.

B. Rework Material.

Not more than 10 percent rework material produced at the same manufacturing plant may be used to produce the pipe and fittings, provided the rework material is clean, or the specified cell classification, and the pipe and fitting produced from this material meet all the requirements of this Specification.

C. Potable Water Use.

The materials used for manufacture of the pipe and fittings shall meet the NSF Standard No. 61 of potable water use and the health effects portion of NSF Standard No. 14.

D. Pipe Quality.

Extrusion quality shall be determined by the reaction of a pipe specimen to immersion in a hydrous acetone for twenty minutes. The specimens shall exhibit no visible surface flaking upon completion of the test. Three (3) specimens of the pipe, 2-inches in length, shall be flattened between two (2) parallel plates until the distance between the plates is forty percent of the O.D. of the pipe specimens. The rate of loading shall be uniform and such that the compression is completed within two (2) to five (5) minutes. There shall be no evidence of splitting, cracking or breaking after removal of the load.

Only new PVC pipe, manufactured not more than six (6) months prior to installation, shall be used for construction of the Work.

E. Workmanship.

The pipe shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other defects.

F. Pipe Lengths.

Nominal lengths of pipe shall be at least 18-feet.

G. Joints.

Except as otherwise provided, polyvinyl chloride pipe shall have integral bell and spigot joints that seal with an elastomeric gasket. The joints shall conform to ASTM D3139, and the gaskets shall conform to ASTM F477.

Polyethylene pipe used for conduits may have integral bell and spigot joints for solvent welding, conforming to ASTM D2672.

Where required to resist movement of the pipe to thrust, pipe joints shall be restrained with mechanical devices specified herein or other approved devices. Where polyvinyl chloride pipe is connected to mechanical joints for ductile iron pipe and fittings, valves or other fixture, the joint shall be restrained with EBAA IRON, Inc. Series 2000PV mechanical joint restraints, or approved equal.

Where polyvinyl chloride pipe is connected with bell and spigot joints, the joint shall be restrained with EBAA IRON, Inc. Series 1500 or Series 6500 split serrated bell harness restraints, or approved equal. All metal restraint devices shall be protected from corrosion with standard 8-mil polyethylene wrap and suitable tape, per AWWA C105.

H. Fittings.

Except as otherwise provided, ductile iron fittings shall be used for changes in line or grade and for connections for polyvinyl chloride pipe. Fittings shall be compact ductile iron fittings conforming to ANSI A21.53 or full body ductile iron fittings conforming to ANSI A21.11.

Unless otherwise required, fittings shall have an interior lining of Portland cement mortar and an exterior bituminous coating.

Unless otherwise required herein or indicated on the Drawings, cast iron fittings shall have mechanical joints.

Buried cast iron fittings shall be protected from corrosion with standard 8-mil polyethylene wrap and suitable tape, per AWWA C105. Such fittings shall be blocked with concrete or otherwise restrained against movement due to thrust.

Fittings for polyvinyl chloride pipe used for conduits shall be polyvinyl chloride fittings with solvent welded bell and spigot joints. All bends for conduit shall be long radius sweep elbows.

I. Pipe Marking.

All pipes shall be marked at intervals of no greater than 5-feet. The marking for pressure pipe shall be:

1. Manufacturer.
2. Nominal pipe size.
3. PVC Specification Number.
4. Water Pipe.
5. SDR/DR Number.
6. Working Pressure (psi).
7. Month, Day, and Year of Manufacture.

J. Affidavit of Compliance.

The Manufacturer shall provide an affidavit that all materials delivered comply with the requirements of this standard and the additional requirements specified herein or call for on the Drawings.

4.0 Storage and Installation

The storage and installation of the PVC pipe shall be in strict accordance with AWWA M23 specifications and manufacturer's procedures and recommendations. Installation shall also conform to all local plumbing, building, and fire code requirements

Pipe shall be bundled in pallets for ease of handling and storage. Pipe bundles (units) shall be packaged to provide structural support to ensure that the weight of upper units shall not cause deformation to pipe in lower units. No pipe bundles shall be accepted which show evidence of ultraviolet radiation "sunburn" on exposed pipe as may be caused from extended unprotected storage conditions.

Taps are to be made using saddles that fully support around the circumference of the pipe as recommended in publication UNIBELL 8-90 "Tapping Guide for PVC Pressure Pipe". Direct threaded taps shall not be allowed.

Unless specifically directed by the Engineer, solvent weld connections are expressly prohibited and shall not be allowed on PVC pressure pipe.

The Work shall be protected from chemical agents, fire stopping materials, thread sealant, plasticized vinyl products, or other aggressive chemical agents not compatible with PVC compounds.

At all times when the work of installing pipe is not in progress, all openings into the pipe and the ends of the pipe in the trenches or structure shall be kept tightly closed to prevent the entrance of animals and foreign materials until its acceptance.

Where closure sections are required by the contractor's installation operations, the sections shall be installed in accordance with the applicable sections of these specifications.

The pipe sections shall be laid in the trench to true alignment and grade in accordance with the Plans. Where the grade is not shown, pipe shall have a minimum cover as designated in the Plans. Curved alignments shall be achieved only by deflecting the pipe joints; the pipe shall not be bent. Joints deflection shall not exceed the manufacturer's recommendation. Where necessary, the Contractor shall shorten the pipe lengths to achieve shorter curve radii.

The pipe shall not be laid along curves at a radius greater than indicated on the Plans.

Trenching, backfilling, and compacting shall be in accordance with Section 13300 and as specified herein.

Proper care shall be used to prevent damage in handling, moving, and placing the pipe. Tools and equipment satisfactory to the Owner's representative shall be provided and used by the Contractor.

The Contractor shall take all necessary precautions to prevent the pipe from floating due to water entering the trench from any source; shall assume full responsibility for any damage due to this cause; and shall pay for and perform the work to restore and replace the pipe to its specified condition and grade if any displacement occurs due to floating.

Excavate bell holes at each joint to permit proper assembly and inspection of the entire joint.

Pipe shall be cut by a method recommended in the pipe manufacturer's installation guide, as approved by the Owner's representative. When pipe is cut and is to be joined to a ductile iron fitting or another piece of pipe, the end shall be beveled in the field or place of manufacture to create a beveled end equal in quality to the machined ends of the pipe as furnished by the manufacturer. Such machining shall not result in undercutting the wall thickness and must be approved by the Owner's representative prior to installation.

All connecting parts of pipe, rings, couplings, and castings shall be cleaned prior to assembly. After bearing has been obtained, couplings shall be assembled in a proper manner (as determined by the Owner's representative). The use of excessive lubricant will not be permitted, and the assembly of the couplings and rings shall be in accordance with the manufacturer's recommendations. The pipe manufacturer shall supply lubricant and rubber rings. All fittings and valves shall have joints that match the type of adjoining pipe.

All fittings and valves shall be supported so that the pipe is not subjected to the weight of these appurtenances.

END OF SECTION

Section 15300 - Testing and Disinfection – Water

1.0 Scope

This Section covers the testing and disinfection of water lines and their appurtenances constructed as shown on the Plans. Testing and disinfection used for the tanks and water lines and their appurtenances shall conform to the standards set forth herein.

Prior to connecting the proposed water lines to the existing water lines, the Contractor shall subject the line to a successful hydrostatic pressure test and shall disinfect the lines.

2.0 Applicable Publications

The most recent issue of the following standard specifications, references or publications shall be a part of these specifications. The Contractor shall construct the project in general accordance with these standards with the additions, exceptions or other modifications indicated on the Drawings or specified herein.

TCEQ Standards, Current published, Chapter 290, Subchapter D – Rules and Regulations for Public Water Systems, and AWWA Standards, Current published (AWWA and/or ASTM) as follows:

1. AWWA C651 Disinfecting Water Mains.
2. NSF Standard 14 Plastic Piping Components and Related Materials.
3. NSF Standard 61 Drinking Water System Components – Health Effects.
4. AWWA C605 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.

3.0 Hydrostatic Testing

All lines and their appurtenances constructed for water service within the Project must be hydrostatically tested as specified herein prior to being accepted by the Owner.

- A. The pipeline shall be filled at a rate such that the average velocity of flow is less than 1-fps. At no time shall the maximum velocity of flow exceed 2-fps. The following table has been provided to relate the velocity filling rate to an equivalent volume flow rate, based on 1-fps.

Line Size (inches)	Flow Rate (gpm)
30"	2,203
24"	1,410
20"	979
18"	793
16"	624
14"	480
12"	353
8"	158
6"	88
4"	38

- B. The pipeline shall receive the approximate quantities of water per 100-feet of length:

Line Size (inches)	Quantity (gallons)
30"	3,670
24"	2,350
20"	1,630
18"	1,320
16"	1,000
14"	800
12"	590
10"	410
8"	260
6"	150
4"	65
3"	37
2"	17

- C. Raise the pressure to hydrostatic test pressure by using a test pump, pumping from a container. The hydrostatic test pressure shall not be less than 1.25 times the maximum anticipated sustaining working pressure at the highest point along the test section, unless the pressure exceeds the design pressure limit for any pipe, thrust restraint, valve fitting, or other appurtenance.
- D. All air should be purged from the pipeline before checking for leaks or performing pressure or acceptance tests on the system. To accomplish this, if air valves or hydrants or other outlets are not available, taps shall be made at the high points to expel the air, and these taps shall be tightly plugged afterwards.
- E. After the working pressure has been attained in the lines, refill the container and maintain the working pressure for a two (2) hour period.

- F. At the end of the two (2) hour hydrostatic pressure test period, measure the water required to refill the container to the pre-test level. The leakage allowable shall not exceed the calculated quantity of water that must be supplied to the pipe section being tested to maintain a pressure within 5 psi of the hydrostatic test pressure. The allowable quantity of makeup water shall be calculated by the following formula:

$$Q = \frac{LD (P^{1/2})}{148,000}$$

Q = Quantity of makeup water, in gallons per hour

L = Length of pipe section being tested, in feet

D = Nominal diameter of the pipe, in inches

P = Average test pressure during the hydrostatic test, in psi (gauge)

- G. Any noticeable leak shall be stopped and all defective pipes, fittings, valves, and other appurtenances discovered in consequence of the test shall be removed and replaced by the Contractor with sound material, and the test shall be repeated until the total leakage during a test of two (2) hours duration does not exceed the rate specified herein.
- H. After successful testing, all lines shall be flushed to remove any foreign matter that may be in the line.
- I. All testing shall be supervised by and conducted in the presence of the Owner's representative. The Owner's representative shall furnish a signed certificate stating that the pressure test has been performed in accordance with the Specifications. The certificate shall contain the following:
1. Date tests were performed.
 2. Name of people in attendance.
 3. Brand name of pipe and pressure rating.
 4. Test pressure.
 5. Number of leaks found during testing.
 6. Comments.
- J. Water for initial testing shall be available from the Owner at no charge to the Contractor. The cost of water for subsequent testing shall be set at the Owner's discretion.

4.0 Disinfection

- A. Method

1. Liquid Chlorine

Liquid chlorine shall contain 100-percent available chlorine packaged in steel cylinders in net weights of 150-pounds or one (1) ton.

Liquid chlorine shall be used with appropriate gas flow chlorinators, heaters, and injectors to provide a controlled high concentration solution feed. The chlorinators and injectors shall be vacuum operated type.

2. Chlorine Gas

Chlorine gas shall be supplied and converted from its liquid form to a gas as detailed in AWWA C651.

3. Calcium Hypochlorite Tablets

Calcium hypochlorite tablets shall have an average weight of 0.009-pounds each and shall contain not less than 70-percent of available chlorine.

- B. All lines shall be thoroughly flushed prior to disinfection. Only the direct chlorine gas feed method shall be used if contaminating material has entered the lines.
- C. Disinfection of completed water lines and their appurtenances shall be in accordance with the requirements of AWWA C651 and the requirements of the TCEQ, Chapter 290, Subchapter D. At the conclusion of the hydrostatic pressure test on the completed water line, potable water shall be introduced into the line slowly. A sufficient quantity of chlorination agent shall be added to the incoming water to produce at least 50-ppm and not more than 100-ppm of chlorine.
- D. Treated water shall be retained in the system for a minimum of 24 hours and shall contain a chlorine residual of not less than 25-ppm at the end of the retention period in all sections being disinfected.
- E. After chlorination, the water shall be flushed from the line, in accordance with the requirements of AWWA C651, at its extremities until the replacement water tests are equal chemically and bacteriologically to those of the permanent source of supply. The chlorinated water may be used later for testing other lines, or if not so used, shall be disposed of by the Contractor as required by AWWA C651. The Contractor shall be responsible for all costs to de-chlorinate the water before it enters any storm drain or watercourse. The Owner shall not be responsible for loss or damage resulting from such disposal.
- F. In order to obtain sufficient scouring and cleaning of the lines, proper water velocity during the flushing operation is necessary. The minimum water velocity during flushing shall be 2 ½-fps to 3-fps.

- G. The Owner shall then take samples of the water from the new main at selected points, and submit to the Texas Department of Health (or other approved laboratory) for bacteriological examination. If the results are satisfactory to the Engineer, then the line disinfecting procedure will have been completed and accepted.

If the results of the examination are unsatisfactory, then the disinfection procedure shall be repeated until a satisfactory test is secured.

- H. A minimum of one (1) sample for each 1,000-feet of completed main will be required or at the next available sampling point beyond 1,000-feet as directed by the Engineer.

5.0 Measurement and Payment

The Contractor shall furnish all labor, materials (including chlorine) and equipment necessary to complete the proper hydrostatic testing and disinfection of the line and this cost shall be included in the unit bid price for installation of the lines.

END OF SECTION

Section 15400 - Gate Valves**1.0 Scope**

- A. This Section covers three inch (3") and larger gate valves where shown on the Drawings.
- B. All three inch (3") and larger gate valves used for construction of this project shall be resilient seated gate valves that conform to the requirements of AWWA C509 and stipulations contained herein.

2.0 Applicable Publications

The most recent issue of the following standard specifications, references or publications shall be a part of these specifications. The Contractor shall construct the project in general accordance with these standards with the additions, exceptions or other modifications indicated on the Drawings or specified herein.

Current published standards of the; AWWA, ASTM, ANSI, and/or NSF.

- 1. AWWA C509 Resilient Seated Gate Valves for Water and Sewerage Systems.
- 2. AWWA C550 Protective Interior Coatings for Valves and Hydrants.
- 3. AWWA C600 Installation of Ductile Iron Water Mains and Their Appurtenances.
- 4. AWWA C800 Underground Service Line Valves and Fittings.
- 5. AWWA C110 Standard for Ductile Iron and Gray Iron Fittings, 3-inch – 48-inch, for Water and Other Liquids.
- 6. AWWA C111 (ANSI C21.11) Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
- 7. ANSI B16 Standards of Pipes and Fittings.
- 8. ASTM F593 Stainless Steel Bolts, Hex Cap Screws, and Studs.
- 9. ASTM D429 Rubber Property Adhesion to Rigid Substrates.
- 10. ASTM B62 Standard Specification for Composition Bronze or Ounce Metal Castings.
- 11. ASTM B584 Standard Specification for Copper Alloy Sand Castings for General Applications.
- 12. NSF Standard 14 Plastic Piping Components and Related Materials.
- 13. NSF Standard 61 Drinking Water System Components – Health Effects.

3.0 Materials

- A. All materials used to manufacture the valves shall be resistant to corrosion and suitable for operation with water containing chemicals normally or frequently

contained in potable water supplies. Bronze used for valve components shall contain no lead or zinc.

- B. The valve body, bonnet, sealing chamber and wedge may be cast from either grey iron or ductile iron.
- C. All internal and external ferrous metal surfaces shall be coated with a fusion bonded powder epoxy with a minimum nominal thickness of 10 mils. The coating shall comply with AWWA C550 standards and shall be certified NSF 61. Coating shall be non-toxic and shall impart no taste to water.
- D. The material that fully encapsulates the disc may be Buna N rubber, EPDM or other suitable and acceptable resilient compound.
- E. The valve stem and stem nut shall be manufactured from bronze.
- F. All O-ring seals and other seals may be Buna N rubber, EPDM or other suitable and acceptable resilient compound.
- G. Hardware and fasteners shall be non-galling stainless steel.

4.0 Construction

- A. Valves shall open by turning the operator in the counter-clockwise direction. When fully open the valves shall have a smooth and unobstructed waterway resulting in minimal head losses. When fully closed, the valves shall be completely water tight at the rated pressure on either side of the gate and atmospheric pressure on the opposite side.
- B. All gate valves shall have non-rising stems. The stems shall be sealed by a suitable arrangement of O-ring seals.
- C. Buried valves shall have two inch (2") operating nuts, and above grade valves shall have hand wheel operators.
- D. Gate valves shall have joints as indicated on the Drawings or specified herein. Buried valves shall have mechanical joint ends. Valves installed above grade shall have flanged ends.
- E. Valves shall have manufacturer's name, year manufactured, and working pressure cast in raised letters on valve body. The valves must have been manufactured within five years of the date of installation.
- F. The best workmanship shall be employed in manufacturing and finishing the valves. The valves must operate freely and easily.

5.0 Installation

- A. Gate valves shall be installed according to procedures recommended by the Manufacturer and the American Water Works Association.
- B. Unless otherwise indicated on the Drawings or required by clearance restraints, valves shall be installed with operating stems in the vertical position.
- C. Buried valves shall be installed with a valve boot, riser and lid. The boot shall not bear on the valve. The boot shall be supported by gravel embedment, a concrete valve base or other suitable support to prevent traffic loads from being transmitted to the valve.
- D. Buried valves shall be wrapped in 8-mil polyethylene secured with suitable tape in accordance with AWWA C105.
- E. The Owner shall inspect all gate valves before they are installed and shall reject any valves found to be damaged or defective to a degree that would affect the function of the Work. Rejected valves shall be immediately removed from the site of the work.
- F. All gate valve locations shall be identified by installing a valve marker post and sign at each location. The markers shall be as shown on the Plans.

6.0 Manufacturer

All gate valves shall be manufactured by MUELLER, CLOW or approved equal.

END OF SECTION

Section 15410 - Check Valves

1.0 Scope

This Section covers check valves constructed as shown on the Plans. Check valves shown on the Plans shall conform to the standards set forth herein.

2.0 Applicable Publications

The following publications for the issues listed below, but referred to thereafter by basic designation only, form a part of this Specification to the extent indicated by the referenced thereto:

AWWA Standards, Current published (AWWA and/or ASTM)

1. AWWA C550 Protective Interior Coatings for Valves and Hydrants.
2. AWWA C600 Installation of Ductile Iron Water Mains and Their Appurtenances.
3. AWWA C800 Underground Service Line Valves and Fittings.
4. ASTM A128 Standard Specification for Steel Castings, Austenitic Manganese.
5. ASTM A536 Standard Specification for Ductile Iron Castings.
6. ASTM B584 Standard Specification for Copper Alloy Sand Castings for General Applications.
7. ASTM B148 Standard Specification for Aluminum Bronze Sand Castings.
8. ASTM A351 Standard Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure Containing Parts.
9. ASTM A313 Standard Specification for Stainless Steel Spring Wire.
10. ASTM A126 Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
11. ASTM B62 Standard Specification for Composition Bronze or Ounce Metal Castings.
12. ASTM B61 Standard Specification for Steam or Valve Bronze Castings.
13. ASTM A48 Standard Specification for Gray Iron Castings.
14. ASTM D1784 Rigid PVC Compounds and CPVC Compounds.
15. ANSI B16 Standards of Pipes and Fittings.
16. ANSI B1.20 National Pipe Tapered (NPT) Standard for Tapered Threads.
17. NSF Standard 14 Plastic Piping Components and Related Materials.
18. NSF Standard 61 Drinking Water System Components – Health Effects.

3.0 Materials

3.1 General

- A. All check valves shall be designed for operation at the discharge of pumps so as to prevent reverse flow and provide drip-tight shut-off at low heads.
- B. All check valves shall be iron body, bronze mounted, and single disc.
- C. All check valves shall be assembled with stainless steel fasteners and the discs shall be bronze and seat against a resilient surface. The discs shall be supported by a stainless-steel hinge pins with O-ring sealed glands.
- D. The ferrous metal interior surfaces of the check valves shall be finished with a durable, corrosion resistant, epoxy coating bonded to the metal.
- E. All check valves shall typically have flanged joints conforming to ANSI B16.1, 125 pound or tapped for flange bolts and designed for installation between such flanges as required or specified on the Plans.
- F. All check valves shall be rated for 150 psi working water pressure and hydrostatically tested at 300 psi.
- G. All check valves shall have bronze seat and body rings, extended bronze hinge pins and bronze nuts on the bolts of bolted covers.
- H. All check valves shall be of the model indicated on the Plans. Should a model not be indicated on the plans, all check valves shall be manufactured by AMERICAN DARLINE, GOLDEN ANDERSON, M & H, MUELLER, CLOW or approved equal. The manufacturer of any horizontal swing check valves used for the Project shall have a service representative in Texas.

3.2 Silent Check Valves

- A. Silent check valves shall be of the silent operating type that begins to close as the forward flow diminishes and is fully closed at zero (0) velocity preventing flow reversal and resultant water hammer or shock.
- B. Wafer style valves shall be provided in sizes 2-inch through 10-inch for installation between ANSI B16.1, Class 125 or Class 250 iron flanges or ANSI B16.5, Class 300 steel flanges.
- C. The valve design shall incorporate a center guided, spring loaded disc, guided at opposite ends and having a short linear stroke that generates a flow area equal to the pipe size.
- D. The operation of the valve shall not be affected by the position of installation. The valve shall be capable of operating in the horizontal or vertical positions

with the flow up or down. Heavy duty springs for vertical flow down installations shall be provided when specified on 14-inch and larger valves.

- E. All component parts shall be field replaceable without the need of special tools. A replaceable guide bushing shall be provided and held in position by the spring. The spring shall be designed to withstand 100,000 cycles without failure and provide a cracking pressure 0.5 psi and to fully open at a flow velocity of 4 fps.
- F. The valve disc shall be concave to the flow direction providing for disc stabilization, maximum strength, and a minimum flow velocity to open the valve.
- G. The valve disc and seat shall have a sealing surface finish of 32 micro-inch or better to ensure positive seating at all pressures. The leakage rate shall not exceed one-half (1/2) of the allowable rate for metal seated valves allowed by AWWA Standard C508 or 0.5 oz. per hour per inch of valve diameter.
- H. The valve flow way shall be contoured and unrestricted to provide full flow areas at all locations within the valve. Valve flow coefficients shall be equal to or greater than specified below and verified by an independent testing laboratory.

Valve Size	Wafer Style	Globe Style
2"	66	N/A
2.5"	88	110
3"	130	155
4"	228	278
5"	N/A	435
6"	520	525
8"	900	1,115
10"	1,450	1,770
12"	N/A	2,500

- I. The valve body shall be constructed of ASTM A128, Class B cast iron for Class 250 valves. Class 150 and Class 300 steel valves shall be constructed of ASTM A128, Grade WCB cast steel. Optional body materials include ASTM A536, Grade 63-45-12 ductile iron.
- J. The seat and disc shall be ASTM B584, Alloy C83600 cast bronze or ASTM B148, Alloy C95200 aluminum bronze. Optional trim materials include ASTM A351, Grade CF8M stainless steel, as specified by the Engineer.
- K. The compression spring shall be ASTM A313, Type 302 stainless steel with ground ends.

- L. A Buna-N seal shall be provided on the seat when specified to provide zero (0) leakage at both high and low pressures without overloading or damaging the seal. The seal design shall provide both a metal to metal and a metal to Buna-N seal.
- M. The valves shall be hydrostatically tested at 1.5 times their rated cold working pressure. Additional tests shall be conducted per AWWA, ANSI, MSS, or API standards when specified. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.
- N. All valves shall be of the model indicated on the Plans. Should a model not be indicated on the plans, all valves shall be manufactured by CLOW or approved equal. The manufacturer of any valves used for the Project shall have a service representative in Texas.

4.0 Installation

- A. Check valves shall be of the kind, size and number as shown on the Plans. They shall be installed as shown on the Plans and according to the manufacturer's recommendations.
- B. The Owner shall inspect all check valves before they are installed and shall reject any that are found to be damaged or defective to a degree that would affect the function of the Work. Rejected horizontal swing check valves shall be immediately removed from the site of the work.

5.0 Measurement and Payment

Check valves shall be measured for payment as a part of the plant bid item. The item shall include labor, materials, and incidentals necessary for a complete installation.

END OF SECTION

Section 15420 - Combination Air Release and Vacuum Valves - Water**1.0 Scope**

This specification covers combination air release and air vacuum valves where called for on the Drawings or specified herein.

2.0 Applicable Publications

The most recent issue of the following standard specifications, references or publications shall be a part of these specifications. The Contractor shall construct the project in general accordance with these standards with the additions, exceptions or other modifications indicated on the Drawings or specified herein.

AWWA Standards, Current published (AWWA and/or ASTM)

1. AWWA C512 Standard for Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Services.
2. AWWA C550 Protective Interior Coatings for Valves and Hydrants.
3. AWWA C600 Installation of Ductile Iron Water Mains and Their Appurtenances.
4. AWWA C800 Underground Service Line Valves and Fittings.
5. NSF Standard 61 Drinking Water System Components – Health Effects.

3.0 Operation

- A. Combination air and vacuum release valves shall be of the single housing style that combines the operating features of an air release and air vacuum valve and shall meet all the requirements of AWWA C512.
- B. The Air Vacuum portion shall automatically exhaust large quantities of air through a large orifice during the filling of the pipeline and automatically allows air to re-enter the pipeline when the internal pressure of the pipeline approaches a negative value due to column separation, draining of the pipeline, power outage, pipeline break, etc.
- C. The Air Release portion shall automatically release small pockets of air from the pipeline while the pipeline is in operation and under pressure.
- D. Once the line is filled, a float shall raise a plug to close the large orifice. The large orifice shall remain closed unless the valve body is vacated of water and

negative pressure occurs inside the line. When those conditions occur, the plug shall recede to its open position allowing large volumes of air to enter the pipe. When air enters the valve body from the pipe while operating under pressure, the float shall descend and open a small orifice allowing release of that air to the atmosphere.

- E. When closed, the valve shall be completely drip-tight.

4.0 Materials

- A. Ductile iron body valves shall meet the material requirements as follows:

Item	Material	Specification
Body and Cover	Ductile Iron	ASTM A536, Gr. 65-
Float	Stainless Steel	ASTM A240
Needle and Seat	Rubber	Buna-N (Chlorine
Drain Plug	Stainless Steel	ASTM A276
Lever Frame	Delrin	ASTM D4181
Casing bolts/nuts	Stainless Steel	ANSI Type 316

- B. Valve exterior to be painted with universal metal primer paint.
- C. All valves 2-inch and smaller shall have threaded inlets. All valves 3- inch and larger shall have flanged or mechanical joint inlets.
- D. Valve Boxes
1. All valve boxes shall be a minimum of two (2) separate bodies for height adjustment and a minimum height adequate to be level with ground or pavement level.
 2. When specified, the lid shall be a “lock type”, if not it shall be standard in design.
- E. All valve locations shall be identified by installing a valve marker post and sign at each location. The markers shall be as shown on the Plans.

5.0 Installation

- A. Valves shall be of the kind, size and number as shown on the Plans. They shall be installed as shown on the Plans, specified herein and in accordance with the manufacturer’s recommendations.
- B. The Owner shall inspect all valves prior to installation and shall reject any

valves found to be damaged or defective to a degree that would affect the function of the Work. Rejected valves shall be immediately removed from the site of the work.

- C. The valve shall be isolated from the pipe with a bronze ball valve and brass nipples and fittings. The outlet shall be fitted with brass nipples and fittings to vent the discharge away from personnel.
- D. Valves shall be installed at high points on the main line or as shown on the Plans. If the profile changes during construction from that shown on the drawings, valve assemblies shall be installed at the high points in lines as constructed.
- E. The tap for the valves shall be made in a level section of pipe no closer than 18-inch from a bell, coupling, joint, or fitting.
- F. Valves shall be hydro-tested in conjunction with the connecting pipelines.

6.0 Manufacturer

Automatic combination air and vacuum release valves shall be APCO Combination Air Valves, Model 143C.

END OF SECTION

Section 15605 - Water Meters – Turbine

1.0 Scope

This Section covers turbine water meters to be constructed as shown on the Plans. Turbine water meters shown on the Plans shall conform to the standards set forth herein.

2.0 Applicable Publications

The following publications for the issues listed below, but referred to thereafter by basic designation only, form a part of this Specification to the extent indicated by the referenced thereto:

AWWA Standards, Current published (AWWA and/or ASTM)

1. AWWAC701 Class II Type Meters for Waterworks Applications.
2. AWWA C600 Installation of Ductile Iron Water Mains and Their Appurtenances.
3. AWWA C110 Standard for Ductile Iron and Gray Iron Fittings, 3-inch – 48-inch, for Water and Other Liquids.
4. AWWA C111 (ANSI C21.11) Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
5. ANSI B16 Standards of Pipes and Fittings.
6. ASTM F593 Stainless Steel Bolts, Hex Cap Screws, and Studs.
7. ASTM D429 Rubber Property Adhesion to Rigid Substrates.
8. ASTM B62 Standard Specification for Composition Bronze or Ounce Metal Castings.
9. ASTM B584 Standard Specification for Copper Alloy Sand Castings for General Applications.
10. NSF Standard 14 Plastic Piping Components and Related Materials.
11. NSF Standard 61 Drinking Water System Components – Health Effects.

3.0 Materials

- A. All meters to be AWWA Class II Turbines.
- B. The main case and cover shall be cast from NSF/ANSI 61, Annex G and Annex F certified lead-free alloy containing a minimum of 85% copper. The size, model, NSF 61 certification and arrows indicating direction of flow shall be cast in raised characters on the main case or cover.
- C. Register shall be straight reading in U.S. gallons. Register boxes and lids shall be bronze.

- D. Operating Pressure. All meters shall operate without leakage or malfunction up to a maximum operating pressure of 150 pounds per square inch.
- E. Operating Characteristics:
- | <u>Size</u> | <u>Normal Flow</u> |
|-------------|--------------------|
| 1½" | 4 – 160 GPM |
| 2" | 4 – 200 GPM |
| 3" | 5 – 450 GPM |
| 4" | 10 – 1,200 GPM |
| 6" | 20 – 2,500 GPM |
| 8" | 35 – 4,000 GPM |
| 10" | 50 – 6,500 GPM |
- F. The main case cover plate and the adjusting screw for adjusting the vane wheel shall be sealed by the use of a heavy-duty plastic sealing cap.
- G. Eye hooks for easy installation of the meters shall be furnished on the 6" and 8" meters.
- H. All meters shall be of the model indicated on the Plans. Should a model not be indicated on the plans, all meters shall be manufactured by Master Meter, McCrometer or approved equal. The manufacturer of any meters used for the Project shall have a service representative in Texas.

4.0 Installation

- A. Meters shall be of the kind, size and number as shown on the Plans. They shall be installed as shown on the Plans and according to the manufacturer's recommendations.
- B. The Owner shall inspect all meters prior to installation and shall reject any meters found to be damaged or defective to a degree that would affect the function of the Work. Rejected meters shall be immediately removed from the site of the work.

5.0 Manufacturer

All meters shall be of the model indicated on the Plans. Should a model not be indicated on the plans, all meters shall be manufactured by Master Meter, McCrometer or approved equal. The manufacturer of any meters used for the Project shall have a service representative in Texas.

END OF SECTION

CONSTRUCTION DRAWINGS - CONTENTS

SPRINGS HILL SUD

BLUMBERG WELL NO. 1 PROJECT

Construction Drawings

<u>Sheet #</u>	<u>Description</u>
1.	Cover: Blumberg Well No. 1
2.	General Notes: Blumberg Well No. 1
3.	Site Plan: Blumberg Well No. 1
4.	Well Profiles: Blumberg Well No. 1
5.	Well Details: Blumberg Well No. 1
6.	Fence Details: Blumberg Well No. 1

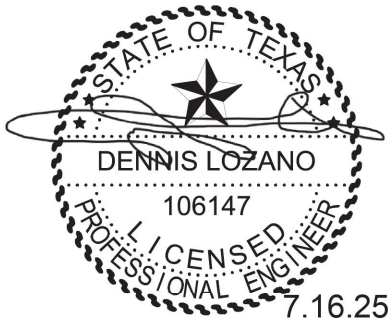
CONSTRUCTION PLANS FOR
SPRINGS HILL SPECIAL UTILITY DISTRICT
BLUMBERG WELL NO. 1
WILSON COUNTY

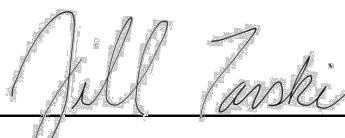
SUBMITTED FOR APPROVAL BY
MALONE/WHEELER, INC.



DENNIS LOZANO, P.E.
REGISTERED PROFESSIONAL ENGINEER NO. 106147
MALONE/WHEELER, INC
5113 SOUTHWEST PARKWAY, SUITE 260
AUSTIN, TEXAS 78735
OFFICE: 512-899-0601
FAX: 512-899-0655
FIRM RE. NO. F-786

07/16/2025
DATE





JILL TARSKI, P.E.
REGISTERED PROFESSIONAL ENGINEER NO. 153531
MALONE/WHEELER, INC
5113 SOUTHWEST PARKWAY, SUITE 260
AUSTIN, TEXAS 78735
OFFICE: 512-899-0601
FAX: 512-899-0655
FIRM RE. NO. F-786

07/16/2025
DATE



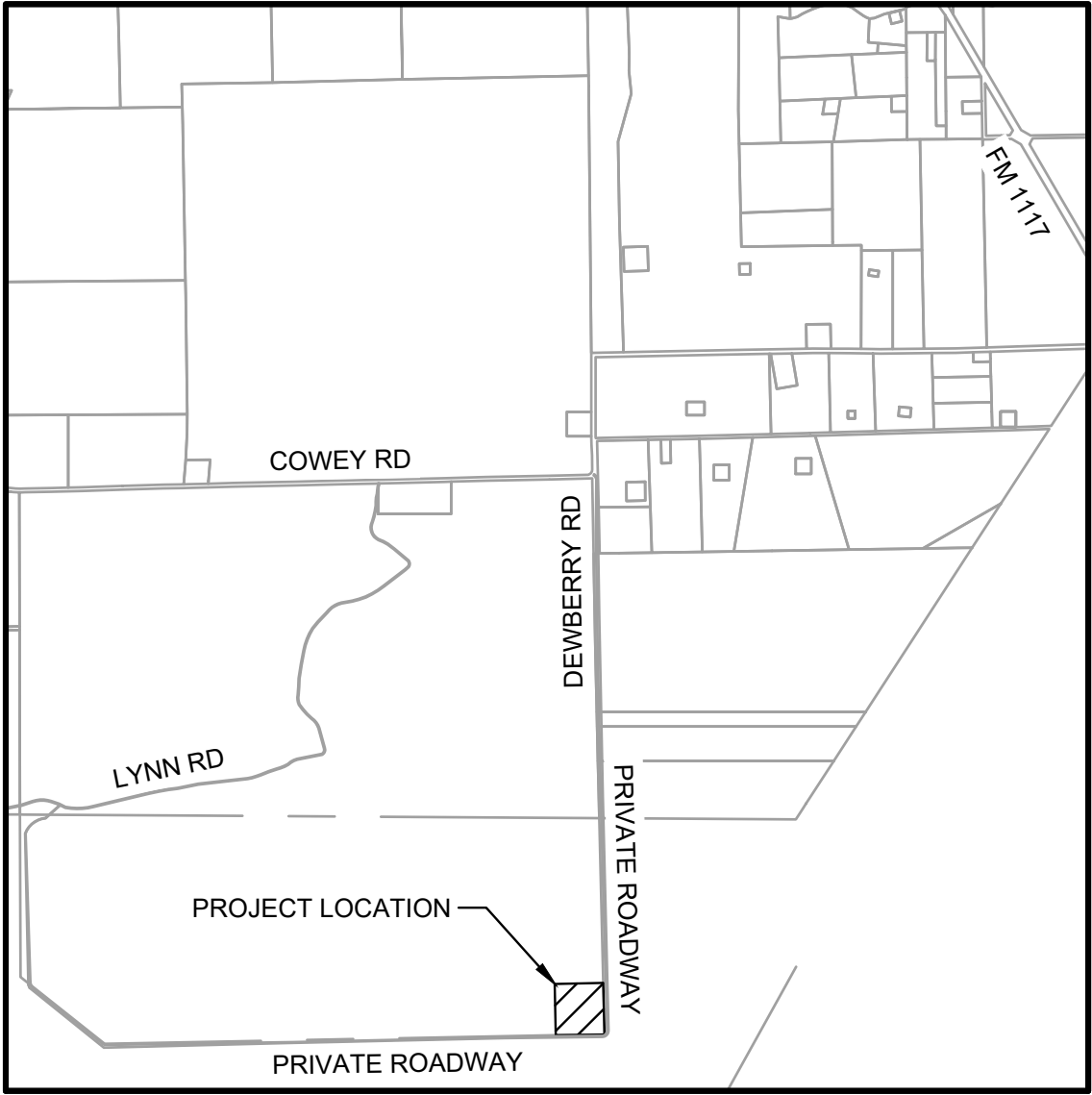
REVIEWED BY:

SPRINGS HILL SPECIAL UTILITY DISTRICT

DATE

PROJECT LEGAL DESCRIPTION

ABSTRACT A0525, G W MARTIN SUR, TRACT 1, 500.00 ACRES



LOCATION MAP

1" = 2500'

DATE OF SUBMITTAL:

7/16/2025

PROJECT ADDRESS:

NIXON, TEXAS 78140

OWNER/DEVELOPER:
SPRINGS HILL SPECIAL UTILITY DISTRICT
5510 S. HWY 123 BYPASS
SEGUIN, TEXAS 78155

ENGINEER:
CONTACT: DENNIS LOZANO, P.E.
JILL TARSKI, P.E.



CIVIL ENGINEERING ★ DEVELOPMENT CONSULTING ★ PROJECT MANAGEMENT

5113 Southwest Pkwy, Suite 260
Austin, Texas 78735
Phone: (512) 899-0601 Fax: (512) 899-0655
Firm Registration No. F-786

SHEET INDEX

- 01 COVER
- 02 GENERAL NOTES
- 03 SITE PLAN
- 04 WELL PROFILE
- 05 WELL DETAILS
- 06 FENCE DETAILS

NO.	REVISION DESCRIPTION	REVISE (R), ADD (A), VOID (V) - SHEET #	TOTAL # SHEETS	WILSON COUNTY	APPROVED BY	DATE



Know what's below.
Call before you dig.

WARNING !!!!

CONTRACTOR TO FIELD VERIFY ALL EXIST. UTILITIES
VERTICALLY AND HORIZONTALLY PRIOR TO
CONSTRUCTION.

F:\SPRINGS HILL WSP\PROJECTS\24-080-AUS BLUMBERG WELL\DRAWINGS\PLANS\TWell No. 102 GENERAL NOTES.DWG, 7/16/2025, RYAN HICKS

SHSUD GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THE PROJECT SHALL BE APPROVED BY SHSUD AND COMPLY WITH ALL APPLICABLE STANDARDS AND REGULATIONS.
2. CONTRACTOR SHALL NOT PROCEED WITH ANY WORK UNTIL WRITTEN APPROVAL IS OBTAINED FROM SHSUD. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED AN APPROVAL WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR AT THE PREROGATIVE OF SHSUD.
3. THE DEVELOPER DEDICATES THE WATER MAINS UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY SHSUD. SHSUD WILL OWN AND MAINTAIN SAID WATER MAINS WHICH ARE LOCATED WITHIN SAID SUBDIVISION (AS APPLICABLE).
4. CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNERS AND THE ENGINEER AND HIS EMPLOYEES, PARTNERS OFFICERS, DIRECTORS, OR CONSULTANTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER, ENGINEER'S DIRECTORS, OFFICERS, EMPLOYEES, OR CONSULTANTS.
5. CONTRACTOR AND / OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION, ANY DAMAGES DONE TO EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, LANDSCAPING AND STRUCTURES, AND EXISTING UTILITIES (NOT ADJUSTED ON PLANS). COST OF RESTORATIONS, IF ANY, SHALL BE THE CONTRACTOR'S ENTIRE EXPENSE.
7. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION.
8. CONTRACTOR SHALL PROCURE ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES AND GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
9. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.
10. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.
11. THE CONTRACTOR SHALL NOT PLACE ANY MATERIALS ON THE RECHARGE ZONE OF THE EDWARDS AQUIFER WITHOUT AN APPROVED WATER POLLUTION ABATEMENT PLAN FROM THE TCEQ 31 TAC 313.4 AND 31 TAC 313.9.
12. BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE 'TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES' AND SHALL BE LOCATED TO PROVIDE MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT WHILE ALWAYS PROVIDING CONTINUOUS TRAFFIC FLOW DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL DEVICES DURING CONSTRUCTION.
13. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.
14. THE LOCATION OF UTILITIES, EITHER UNDERGROUND OR OVERHEAD, SHOWN WITHIN THE RIGHT OF WAY ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE BEGINNING CONSTRUCTION OPERATIONS.
15. OSHA REGULATIONS PROHIBIT OPERATIONS THAT WILL BRING PERSONS OR EQUIPMENT WITHIN 10 FEET OF AN ENERGIZED LINE. WHERE WORKERS AND/OR EQUIPMENT HAVE TO WORK CLOSE TO AN ENERGIZED ELECTRICAL LINE, THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL POWER COMPANY INVOLVED AND MAKE WHATEVER ADJUSTMENTS NECESSARY TO ENSURE THE SAFETY OF THOSE WORKERS.
16. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION. UTILITY COMPANIES ARE ALSO PREVIOUSLY MENTIONED IN "UTILITY COMPANY NOTIFICATION".
17. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192 (8), GAS COMPANIES MUST ALWAYS MAINTAIN ACCESS TO GAS VALVES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
18. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR FURNISHING ALL TRAFFIC CONTROL DEVICES, AND FLAGGERS. THE CONSTRUCTION METHODS SHALL BE CONDUCTED TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC TO ALWAYS PERMIT THE CONTINUOUS MOVEMENT OF THE TRAFFIC IN ONE DIRECTION. THE CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE WORK AREA ANY LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS AT THE END OF EACH WORKDAY.
19. PRIOR TO ORDERING MATERIALS TO BE USED IN CONSTRUCTION, CONTRACTOR SHALL PROVIDE SHSUD WITH FOUR (4) COPIES OF THE SOURCE, TYPE, GRADATION, MATERIAL SPECIFICATION DATA AND / OR SHOP DRAWINGS, AS APPLICABLE, TO SATISFY THE REQUIREMENTS OF THE FOLLOWING ITEMS AND ALL MATERIAL ITEMS REFERRED TO IN THESE LISTED ITEMS: A. WATER MAINS AND SERVICES
20. NO METER BOXES, VALVES, TO BE SET IN DRIVEWAYS OR SIDEWALKS. ANY METER BOXES SET IN THESE AREAS WILL BE RELOCATED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
21. WHERE THE MINIMUM 9-FOOT SEPARATION DISTANCE BETWEEN SEWER LINES AND WATER LINES / MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF WATER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ.
22. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEO-TECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEO-TECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
23. UTILITY TRENCH COMPACTION WITH STREET RIGHT-OF-WAY.

A. ALL UTILITY TRENCH COMPACTION TEST WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER.

B. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE.

C. EACH LAYER OF MATERIAL SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E.

D. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY SHSUD.

E. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE SHSUD INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.
24. A HYDROSTATIC TEST SHALL BE PERFORMED AFTER SERVICES ARE CONNECTED AND FINAL GRADING AND PLACEMENT ARE COMPLETE.

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. AT A MINIMUM, CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS MEET TCEQ'S "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS."
2. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NSF INTERNATIONAL STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI [§290.44(A)(1)].
3. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NSF INTERNATIONAL SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS [§290.44(A)(2)].
4. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY [§290.44(A)(3)].
5. ALL WATER LINE CROSSINGS OF WASTEWATER MAINS SHALL BE PERPENDICULAR [§290.44(E)(4)(B)].
6. WATER TRANSMISSION AND DISTRIBUTION LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE [§290.44(A)(4)].
7. THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES IS 0.25 PERCENT [§290.44(B)].
8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES WITH VENT OPENINGS TO THE ATMOSPHERE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT [§290.44(D)(1)].
9. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION [§290.44(F)(1)].
10. WHEN WATERLINES ARE LAID UNDER ANY FLOWING OR INTERMITTENT STREAM OR SEMI-PERMANENT BODY OF WATER THE WATERLINE SHALL BE INSTALLED IN A SEPARATE WATERTIGHT PIPE ENCASEMENT. VALVES MUST BE PROVIDED ON EACH SIDE OF THE CROSSING WITH FACILITIES TO ALLOW THE UNDERWATER PORTION OF THE SYSTEM TO BE ISOLATED AND TESTED [§290.44(F)(2)].
11. PURSUANT TO 30 TAC §290.44(A)(5), THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE. INCLUDE THE FORMULAS IN THE NOTES ON THE PLANS.

$$Q = \frac{LD\sqrt{P}}{148,000}$$

WHERE:

• Q = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,

• L = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,

• D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND

• P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

$$L = \frac{SD\sqrt{P}}{148,000}$$

WHERE:

• L = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,

• S = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,

• D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND

• P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

12. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS, AND MATERIALS UTILIZED MUST MEET §290.44(E)(1)-(4).

13. THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET. WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT [§290.44(E)(9)].

14. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER LINE, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION [§290.44(E)(8)].

15. SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED WITHIN FIVE FEET OF ANY TILE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE [§290.44(E)(7)].

16. WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS [§290.44(E)(8)].

17. THE CONTRACTOR SHALL DISINFECT THE NEW WATERLINES IN ACCORDANCE WITH AWWA STANDARD C-651-14 OR MOST RECENT, THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATERLINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER [§290.44(F)(3)].

18. DECHLORINATION OF DISINFECTING WATER SHALL BE IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARD C655-09 OR MOST RECENT.

TCEQ WATER WELL GENERAL CONSTRUCTION NOTES

1. THESE WATER WELL FACILITIES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. AT A MINIMUM, CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS MEET TCEQ'S "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS."

2. THE PREMISES, MATERIALS, TOOLS, AND DRILLING EQUIPMENT SHALL BE MAINTAINED SO AS TO MINIMIZE CONTAMINATION OF THE GROUNDWATER DURING DRILLING OPERATION.

3. WATER USED IN ANY DRILLING OPERATION SHALL BE OF SAFE SANITARY QUALITY. WATER USED IN THE MIXING OF DRILLING FLUIDS OR MUD SHALL CONTAIN A CHLORINE RESIDUAL OF AT LEAST 0.5 MILLIGRAMS PER LITER (MG/L).

4. THE SLUSH PIT SHALL BE CONSTRUCTED AND MAINTAINED SO AS TO MINIMIZE CONTAMINATION OF THE DRILLING MUD.

5. NO TEMPORARY TOILET FACILITIES SHALL BE MAINTAINED WITHIN 150 FEET OF THE WELL BEING CONSTRUCTED UNLESS THEY ARE OF A SEALED, LEAKPROOF TYPE.

6. THE CONSTRUCTION, DISINFECTION, PROTECTION, AND TESTING OF A WELL TO BE USED AS A PUBLIC WATER SUPPLY SOURCE MUST MEET THE FOLLOWING CONDITIONS.

A. THE CASING MATERIAL USED IN THE CONSTRUCTION OF WELLS FOR PUBLIC USE SHALL BE NEW CARBON STEEL, HIGH STRENGTH LOW ALLOY STEEL, STAINLESS STEEL OR PLASTIC. THE MATERIAL SHALL CONFORM TO THE MOST RECENT AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARDS. THE CASING SHALL EXTEND A MINIMUM OF 18 INCHES ABOVE THE ELEVATION OF THE FINISHED FLOOR OF THE PUMP ROOM OR NATURAL GROUND SURFACE AND A MINIMUM OF ONE INCH ABOVE THE SEALING BLOCK OR PUMP MOTOR FOUNDATION BLOCK WHEN PROVIDED. THE CASING SHALL EXTEND AT LEAST TO THE DEPTH OF THE SHALLOWEST WATER FORMATION TO BE DEVELOPED AND DEEPER, IF NECESSARY, IN ORDER TO ELIMINATE ALL UNDESIRABLE WATER BEARING STRATA. WELL CONSTRUCTION MATERIALS CONTAINING MORE THAN 0.25 PERCENT LEAD ARE PROHIBITED.

B. THE SPACE BETWEEN THE CASING AND DRILL HOLE SHALL BE SEALED BY USING ENOUGH CEMENT UNDER PRESSURE TO COMPLETELY FILL AND SEAL THE ANNULAR SPACE BETWEEN THE CASING AND THE DRILL HOLE. THE WELL CASING SHALL BE CEMENTED IN THIS MANNER FROM THE TOP OF THE SHALLOWEST FORMATION TO BE DEVELOPED TO THE EARTH'S SURFACE. THE DRILLER SHALL UTILIZE A PRESSURE CEMENTATION METHOD IN ACCORDANCE WITH THE AWWA STANDARD FOR WATER WELLS (A100-15) OR MOST RECENT, APPENDIX C. SECTION C.2 (POSITIVE DISPLACEMENT EXTERIOR METHOD); SECTION C.3 (INTERIOR METHOD WITHOUT PLUG); SECTION C.4 (POSITIVE PLACEMENT, INTERIOR METHOD, DRILLABLE PLUG); AND SECTION C.5 (PLACEMENT THROUGH FLOAT SHOE ATTACHED TO BOTTOM OF CASING).

C. THE GROUTING MIXTURE USED TO PRESSURE CEMENT THE ANNULAR SPACE SHALL BE NEAT CEMENT AS SPECIFIED IN THE MOST RECENT AWWA STANDARD FOR WATER WELLS AND TO WHICH A MAXIMUM OF 6%, BY DRY WEIGHT, BENTONITE AND 2%, BY DRY WEIGHT, CALCIUM CHLORIDE MAY BE ADDED. THE MINIMUM ANNULAR SPACE BETWEEN THE INSIDE DIAMETER OF THE CASING PIPE AND THE BOREHOLE SHALL BE NO LESS THAN 1 1/2 INCHES IN RADIAL THICKNESS OR THREE INCHES IN NET DIAMETRICAL DIFFERENCE AND THE PRESSURE GROUTING SHALL BE FROM THE BOTTOM UPWARD UTILIZING ONE OF THE METHODS LISTED IN THIS SUBPARAGRAPH FOR ALL PUBLIC WATER SYSTEM GROUNDWATER WELL CONSTRUCTION.

D. THE GROUTING MIXTURE USED TO PRESSURE CEMENT THE ANNULAR SPACE SHALL BE NEAT CEMENT AS SPECIFIED IN THE MOST RECENT AWWA STANDARD FOR WATER WELLS AND TO WHICH A MAXIMUM OF 6%, BY DRY WEIGHT, BENTONITE AND 2%, BY DRY WEIGHT, CALCIUM CHLORIDE MAY BE ADDED. THE MINIMUM ANNULAR SPACE BETWEEN THE OUTSIDE DIAMETER OF THE CASING PIPE AND THE BOREHOLE SHALL BE NO LESS THAN 1 1/2 INCHES IN RADIAL THICKNESS OR THREE INCHES IN NET DIAMETRICAL DIFFERENCE AND THE PRESSURE GROUTING SHALL BE FROM THE BOTTOM UPWARD UTILIZING ONE OF THE METHODS LISTED IN THIS SUBPARAGRAPH FOR ALL PUBLIC WATER SYSTEM GROUNDWATER WELL CONSTRUCTION.

E. ALL GRAVEL SHALL BE OF SELECTED AND GRADED QUALITY AND SHALL BE THOROUGHLY DISINFECTED WITH A 50 MG/L CHLORINE SOLUTION AS IT IS ADDED TO THE WELL CAVITY.

F. SAFEGUARDS SHALL BE TAKEN TO PREVENT POSSIBLE CONTAMINATION OF THE WATER OR DAMAGE BY TRESPASSERS FOLLOWING THE COMPLETION OF THE WELL AND PRIOR TO INSTALLATION OF PERMANENT PUMPING EQUIPMENT.

G. UPON WELL COMPLETION, OR AFTER AN EXISTING WELL HAS BEEN REWORKED, THE WELL SHALL BE DISINFECTED IN ACCORDANCE WITH RECENT AWWA STANDARD C654-13 OR MOST RECENT FOR WELL DISINFECTION EXCEPT THAT THE DISINFECTANT SHALL REMAIN IN THE WELL FOR AT LEAST 12- HOURS.

7. DECHLORINATION OF DISINFECTING WATER SHALL BE IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARD C655-09 OR MOST RECENT.

8. THE WELL SITE SHALL BE FINE GRADED SO THAT THE SITE IS FREE FROM DEPRESSIONS, REVERSE GRADES, OR AREAS TOO ROUGH FOR PROPER GROUND MAINTENANCE SO AS TO ENSURE THAT SURFACE WATER WILL DRAIN AWAY FROM THE WELL. IN ALL CASES, ARRANGEMENTS SHALL BE MADE TO CONVEY WELL PUMP DRAINAGE, PACKING GLAND LEAKAGE, AND FLOOR DRAINAGE AWAY FROM THE WELLHEAD. SUITABLE DRAIN PIPES LOCATED AT THE OUTER EDGE OF THE CONCRETE FLOOR SHALL BE PROVIDED TO COLLECT THIS WATER AND PREVENT ITS PONDING OR COLLECTING AROUND THE WELLHEAD. THIS WASTEWATER SHALL BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ANY NUISANCE FROM MOSQUITO BREEDING OR STAGNATION. DRAINS SHALL NOT BE DIRECTLY CONNECTED TO STORM OR SANITARY SEWERS.

9. A CONCRETE SEALING BLOCK EXTENDING AT LEAST THREE FEET FROM THE WELL CASING IN ALL DIRECTIONS, WITH A MINIMUM THICKNESS OF SIX INCHES AND SLOPED TO DRAIN AWAY AT NOT LESS THAN 0.25 INCHES PER FOOT SHALL BE PROVIDED AROUND THE WELLHEAD.

10. WELLHEADS AND PUMP BASES SHALL BE SEALED BY A GASKET OR SEALING COMPOUND AND PROPERLY VENTED TO PREVENT THE POSSIBILITY OF CONTAMINATING THE WELL WATER. A WELL CASING VENT SHALL BE PROVIDED WITH AN OPENING THAT IS COVERED WITH 16-MESH OR FINER CORROSION RESISTANT SCREEN, FACING DOWNWARD, ELEVATED AND LOCATED SO AS TO MINIMIZE THE DRAWING OF CONTAMINANTS INTO THE WELL. WELLHEADS AND WELL VENTS SHALL BE AT LEAST TWO FEET ABOVE THE HIGHEST KNOWN WATERMARK OR 100 YEAR FLOOD ELEVATION, IF AVAILABLE OR ADEQUATELY PROTECTED FROM POSSIBLE FLOOD DAMAGE BY LEVEES.

11. IF A WELL BLOW OFF LINE IS PROVIDED, ITS DISCHARGE SHALL TERMINATE IN A DOWNWARD DIRECTION AND AT A POINT WHICH WILL NOT BE SUBMERGED BY FLOOD WATERS.

12. A SUITABLE SAMPLING COCK SHALL BE PROVIDED ON THE DISCHARGE PIPE OF EACH WELL PUMP PRIOR TO ANY TREATMENT.

13. FLOW MEASURING DEVICES SHALL BE PROVIDED FOR EACH WELL TO MEASURE PRODUCTION YIELDS AND PROVIDE FOR THE ACCUMULATION OF WATER PRODUCTION DATA. THESE DEVICES SHALL BE LOCATED TO FACILITATE DAILY READING.

14. ALL COMPLETED WELL UNITS SHALL BE PROTECTED BY INTRUDER RESISTANT FENCES, THE GATES OF WHICH ARE PROVIDED WITH LOCKS OR SHALL BE ENCLOSED IN LOCKED, VENTILATED WELL HOUSES TO EXCLUDE POSSIBLE CONTAMINATION OR DAMAGE TO THE FACILITIES BY TRESPASSERS. THE GATES OR WELL HOUSES SHALL BE LOCKED DURING PERIODS OF DARKNESS AND WHEN THE PLANT IS UNATTENDED.

15. AN ALL-WEATHER ACCESS SHALL BE PROVIDED TO EACH WELL SITE.

16. AN AIR RELEASE DEVICE SHALL BE INSTALLED IN SUCH A MANNER AS TO PRECLUDE THE POSSIBILITY OF SUBMERGENCE OR POSSIBLE ENTRANCE OF CONTAMINANTS. IN THIS RESPECT, ALL OPENINGS TO THE ATMOSPHERE SHALL BE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT.

MALONE ★ WHEELER
SINCE 1975
INC.

CIVIL ENGINEERING ★ DEVELOPMENT CONSULTING ★ PROJECT MANAGEMENT
5113 Southwest Pkwy, Suite 240
Austin, Texas 78735
Phone: (512) 899-0601 Fax: (512) 899-0655
Firm Registration No. F-786

DESIGN BY : JT
CHECKED BY : JT
APPROVED BY : DL
DATE : 7/16/2025

SHEET 02
OF 06

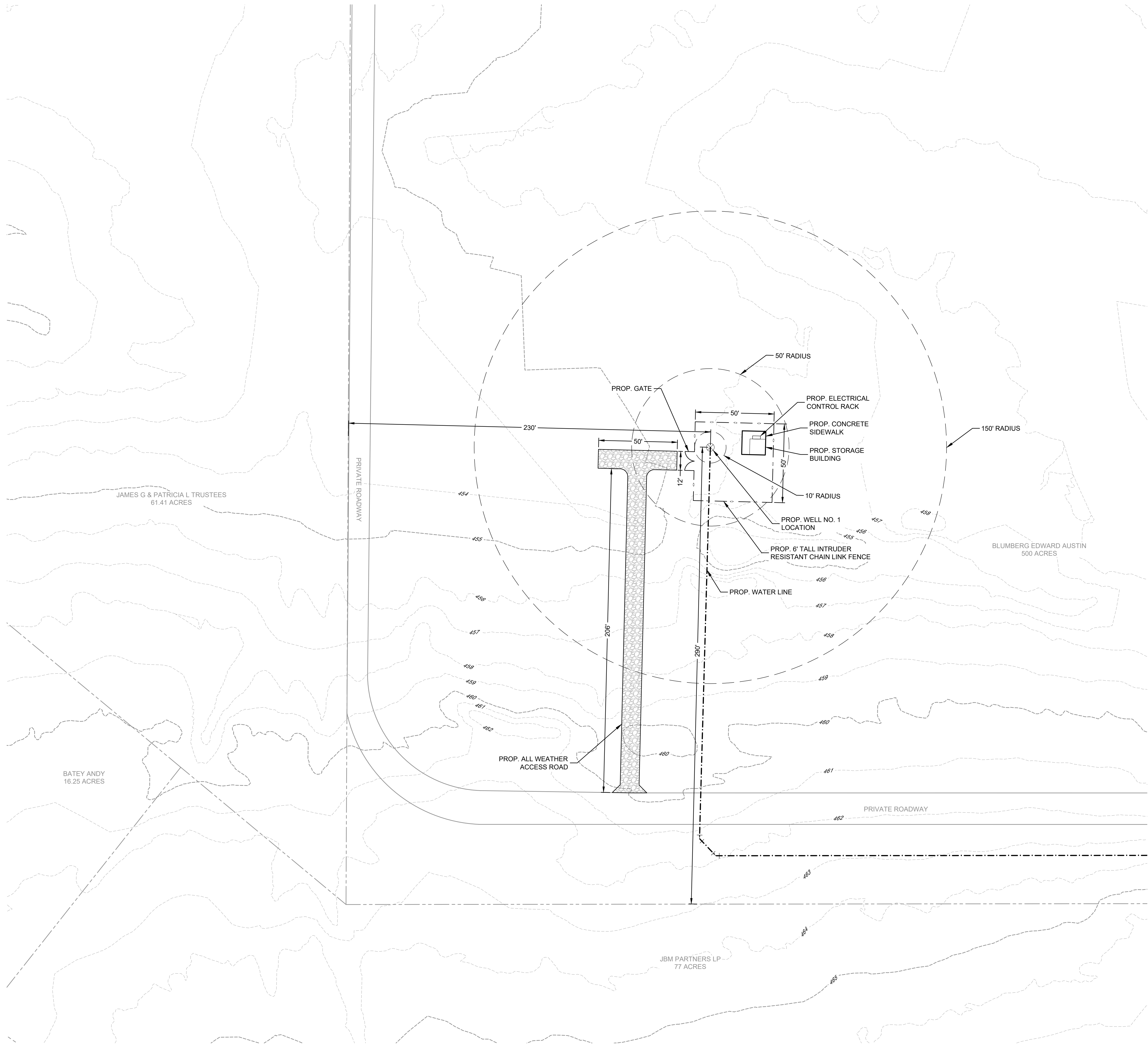
WARNING !!!!
CONTRACTOR TO FIELD VERIFY ALL EXIST. UTILITIES
VERTICALLY AND HORIZONTALLY PRIOR TO CONSTRUCTION.

SPRINGS HILL SPECIAL UTILITY DISTRICT
BLUMBERG WELL NO. 1

GENERAL NOTES

F:\springs hill west\Projects\24-080-aus blumberg well\Drawings\Plans\TWell No. 102 GENERAL NOTES.dwg, 1

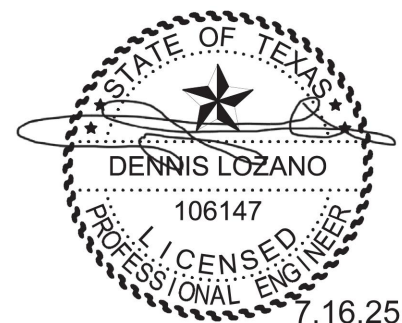
F:\SPRINGS HILL WSP\PROJECTS\04-000-AUS BLUMBERG WELLDRAWINGS\PLANS\WELL NO. 103 SITE PLAN.DWG, 7/16/2025, RYAN HICKS



- NOTES:
- ALL WATER, DRILLING FLUIDS, AND CUTTING SHALL BE MAINTAINED ON THE PROPERTY.
 - SINCE THE DISTURBED AREA IS LESS THAN 1 ACRE, NO STORM WATER POLLUTION PREVENTION PLAN IS REQUIRED.
 - PROJECTS CONSTRUCTED ON OR AFTER JANUARY 1ST, 2014 MUST COMPLY WITH THE REDUCTION IN LEAD DRINKING WATER ACT THAT REDUCES THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FIXTURES AND FIXTURES TO 0.25 PERCENT.

MALONE ★ WHEELER
INC. SINCE 1975

CIVIL ENGINEERING ★ DEVELOPMENT CONSULTING ★ PROJECT MANAGEMENT
5113 Southwest Pkwy, Suite 260
Austin, Texas 78735
Phone: (512) 899-0601 Fax: (512) 899-0655
Firm Registration No. F-786



DESIGN BY : JT
CHECKED BY : JT
APPROVED BY : DL
DATE : 7/16/2025

SHEET 03
OF 06

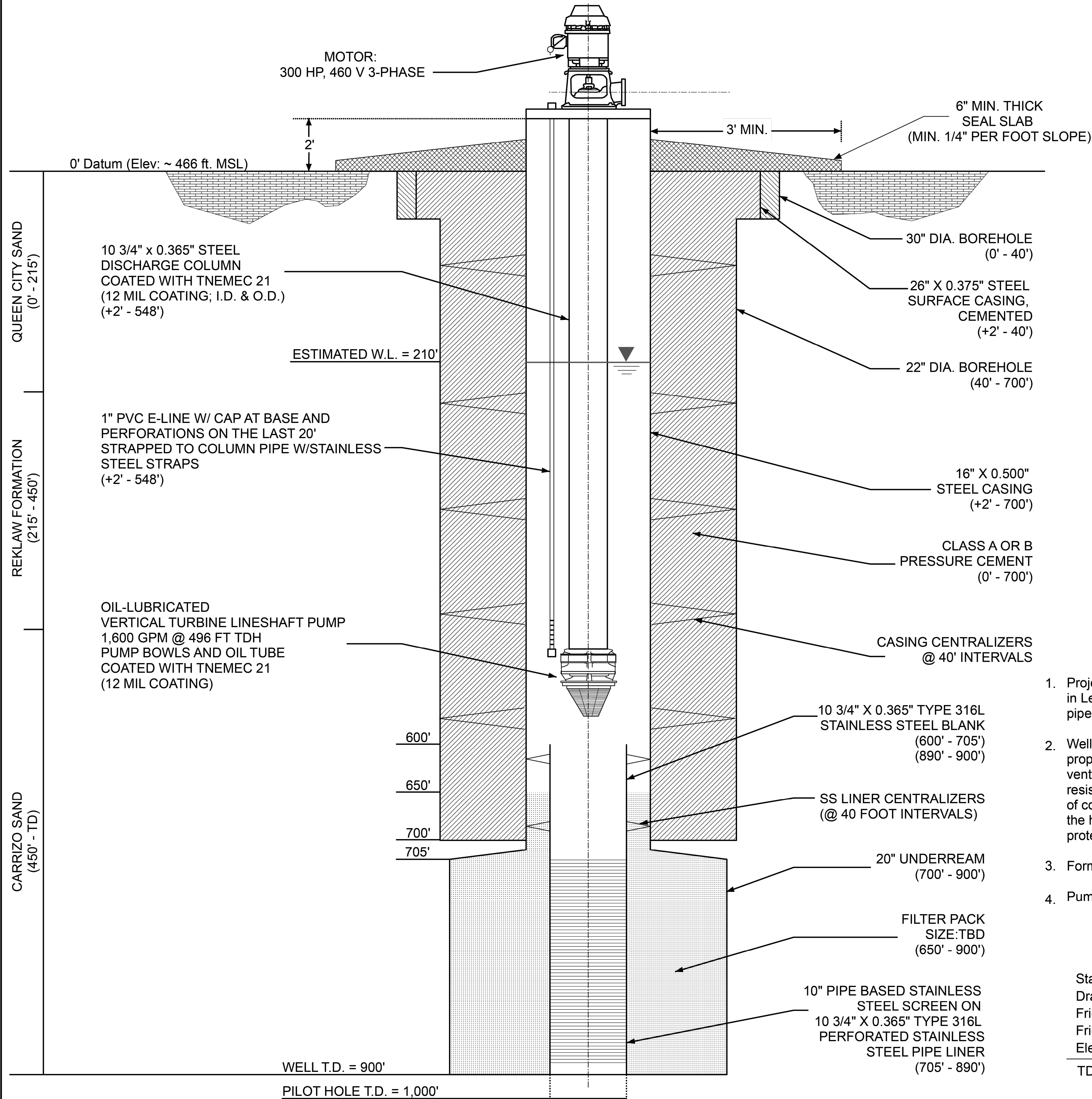
SPRINGS HILL SPECIAL UTILITY DISTRICT
BLUMBERG WELL NO. 1

SITE PLAN

NO.	DATE	REVISION	BY

F:\springs hill wsep\projects\04-000-aus blumberg well\Drawings\Plans\well no. 103 site plan.dwg, 1

F:\SPRINGS HILL\PROJECTS\24-080-AUS BLUMBERG WELL DRAWINGS\PLANSET\WELL NO. 104 WELL PROFILE.dwg, 7/16/2025, RYAN HICKS



Notes:

- Projects constructed on or after January 1, 2014 must comply with the Reduction in Lead in Drinking Water Act that reduces the maximum allowable lead content of pipes, pipe fittings, plumbing fixtures and fixtures to 0.25 percent.
- Wellheads and pump bases shall be sealed by a gasket or sealing compound and properly vented to prevent the possibility of contaminating the well water. A well casing vent shall be provided with an opening that is covered with 16-mesh or finer corrosion-resistant screen, facing downward, elevated and located so as to minimize the drawing of contaminants into the well. Wellheads and well vents shall be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.
- Formation depths are general and for illustrative purposes only.
- Pump head calculations are estimated and are subject to change.

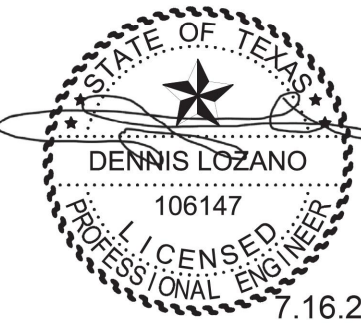
Pump Head Calculations

Static	210'
Drawdown	135'
Frictional Loss (Column Pipe)	6.71'
Frictional Loss (Line)	33'
Elevation	111'
TDH	495.71'

SPRINGS HILL SPECIAL UTILITY DISTRICT
BLUMBERG WELL NO. 1

WELL PROFILE

MALONE ★ WHEELER
SINCE 1975
CIVIL ENGINEERING ★ DEVELOPMENT CONSULTING ★ PROJECT MANAGEMENT
5113 Southwest Pkwy. Suite 260
Austin, Texas 78735
Phone: (512) 899-0601 Fax: (512) 899-0655
Firm Registration No. F-786



DESIGN BY: JT
CHECKED BY: JT
APPROVED BY: DL
DATE: 7/16/2025

SHEET 04
OF 06

F:\springs hill\well\Projects\24-080-aus blumberg well\Drawings\PlanSet\WELL NO. 104 WELL PROFILE.dwg, 1

PLAN - TYP. SEAL SLAB
SCALE: NONE

E-LINE ASSEMBLY
SCALE: NONE

SECTION A & WELL HEAD DETAIL
SCALE: NONE

PIPE SUPPORT
SCALE: NONE

Notes:

1. Contract ends at well head. Discharge piping, valves, etc are shown for informational purposes. See Bid Schedule for items included in this project.
2. Projects constructed on or after January 1, 2014 must comply with the Reduction in Lead in Drinking Water Act that reduces the maximum allowable lead content of pipes, pipe fittings, plumbing fixtures and fixtures to 0.25%.
3. Wellheads and pump bases shall be sealed by a gasket or sealing compound and properly vented to prevent the possibility of contaminating the well water. A well casing vent shall be provided with an opening that is covered with 16-mesh or finer corrosion-resistant screen, facing downward, elevated and located so as to minimize the drawing of contaminants into the well. Wellheads and well vents shall be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.

[illegible]

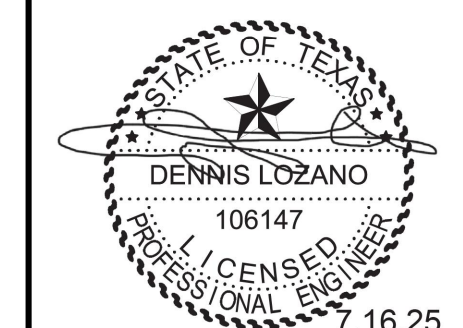
SPRINGS HILL SPECIAL UTILITY DISTRICT
BLUMBERG WELL NO. 1

WELL DETAILS

MALONE ★ WHEELER
INC. 1995

CIVIL ENGINEERING ★ DEVELOPMENT CONSULTING ★ PROJECT MANAGEMENT

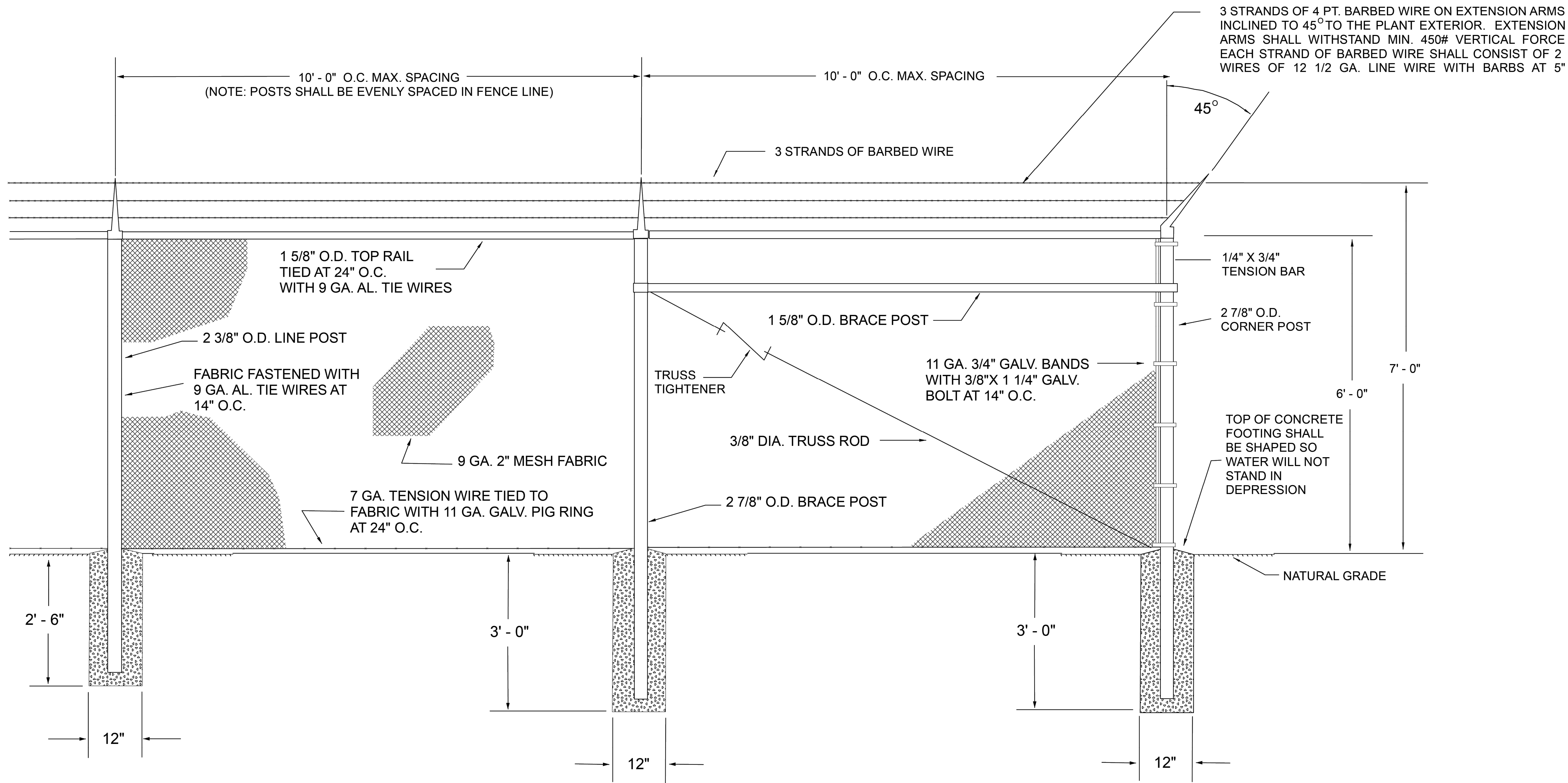
5113 Southwest Pkwy, Suite 260
Austin, Texas 78735
Phone: (512) 899-0601 Fax: (512) 899-0655
Firm Registration No. 1-786



DESIGN BY : JT
CHECKED BY : JT
APPROVED BY : DL
DATE : 7/16/2025

SHEET 05
OF 06

F:\SPRINGS HILL\WSP\PROJECTS\24-060-AUS BLUMBERG WELLDRAWINGS\PLANSET\WELL NO. 106 FENCE DETAILS.DWG, 7/16/2025, RYAN HICKS

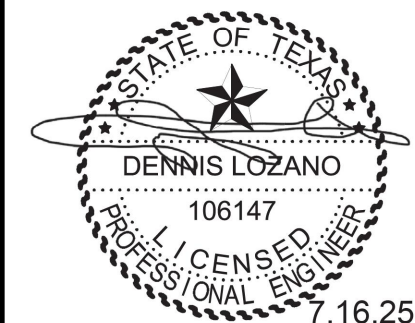


SPRINGS HILL SPECIAL UTILITY DISTRICT
BLUMBERG WELL NO. 1

FENCE DETAILS

MALONE ★ WHEELER
INC. SINCE 1975

CIVIL ENGINEERING ★ DEVELOPMENT CONSULTING ★ PROJECT MANAGEMENT
5113 Southwest Pkwy, Suite 260
Austin, Texas 78735
Phone: (512) 899-0601 Fax: (512) 899-0655
Firm Registration No. F-786



DESIGN BY: JT
CHECKED BY: JT
APPROVED BY: DL
DATE: 7/16/2025

SHEET 06
OF 06

F:\springs hill\well\Projects\24-060-aus blumberg well\Drawings\PlanSet\WELL NO. 106 FENCE DETAILS.dwg, 1