RESOLUTION NO. R-2022-59

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BASTROP, TEXAS APPROVING A CONSTRUCTION CONTRACT WITH SOUTHERN UTILITY WORKS, LLC IN THE AMOUNT OF TWO HUNDRED NINETY-ONE THOUSAND TWO HUNDRED SEVENTY-THREE DOLLARS AND THREE CENTS ($291,273.03) FOR THE CONSTRUCTION OF THE PUBLIC WORKS DETENTION POND PUMP STATION; AUTHORIZING CITY MANAGER TO EXECUTE ALL NECESSARY DOCUMENTS; PROVIDING FOR A REPEALING CLAUSE; AND ESTABLISHING AN EFFECTIVE DATE.

WHEREAS, the City of Bastrop City Council understands the importance of public safety provided by performing infrastructure improvements; and

WHEREAS, The City of Bastrop City Council understands focusing on infrastructure improvements in the area of drainage; and

WHEREAS, the City of Bastrop was awarded additional grant funds from FEMA Mitigation funds to help cover the costs of a pump station at the Public Works Detention Pond; and

WHEREAS, the City of Bastrop understands and agrees to commit 25% or more matching funds to secure and complete the FEMA Mitigation Grant; and

WHEREAS, the City of Bastrop has utilized BEFCO Engineering, Inc. for the engineering services on the Public Works Detention Pond Pump Station project;

WHEREAS, BEFCO Engineering has received all proposals, and found the lowest responsible bidder to be qualified.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF BASTROP, TEXAS:

Section 1. The City has followed 2CFR 200 in the procurement of a construction company for this project and authorizes the City Manager to execute a construction contract for the Public Works Detention Pond Pump Station project with Southern Utility Works, LLC in the amount of $291,273.03.

Section 2. That the City is committing to provide 25% or more matching funds in contribution to the FEMA Mitigation for this project.

Section 3. This resolution shall take effect immediately from and after its passage, and it is duly resolved.
DULY RESOLVED AND ADOPTED by the City Council of the City of Bastrop this 12 day of July, 2022.

APPROVED:

[Signature]
Connie B. Schroeder, Mayor

Dorisella Rogers, Mayor Pro Tem

ATTEST:

[Signature]
Ann Franklin
Ann Franklin, City Secretary

APPROVED AS TO FORM:

[Signature]
Alan Bojorquez, City Attorney
August 4, 2022

City of Bastrop
1311 Chestnut Street
Bastrop, TX 78602

Re: Public Works Detention Pond Pump Station
FEMA HMGP DR-4272-0024-TX
BEFCO Job No. 16-6780

Please find attached four (4) original copies of the contract documents for the project listed above. Please execute and have someone attest your signature on all 4 copies where noted. Please do not date where you are signing.

Also, located in the back of each book is an attorney review certificate. If City of Bastrop elects to have their legal counsel review the books and associated bonds, please have the attorney sign/date after their review. If City of Bastrop does not elect to have legal review, then put a diagonal slash across page and initial/date near the slash.

If you have any questions or require more information, please advise. Thank you for the opportunity to provide engineering services for this project and to City of Bastrop Staff for assisting us with this project.

Sincerely,

BEFCO ENGINEERING, INC. (F-2011)

Tim Sanders, P. E.

Attachments: 4 Copies of the Contract Documents

TS:dc
### Certificate of Liability Insurance

**Producer:** J. S. Edwards & Sherlock Insurance Agency, LLP  
**Address:** P. O. Box 22037  
**City, State:** Beaumont, TX 77720

**Insured:** Southern Utility Works LLC  
**Address:** 1025 IH-10 N  
**City, State:** Beaumont, TX 77706

---

**Certification:**

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not affirmatively or negatively amend, extend or alter the coverage afforded by the policies below. This certificate of insurance does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder.

---

**Certificate Numbers:**

**Certificate Number:** 3AA574659  
**Effective Date:** 06/14/2022  
**Limits:**
- Each Occurrence: $1,000,000
- Damage to Rented Premises (Excluded): $100,000
- Medical Expenses: $5,000
- Personal & AD&I: $1,000,000
- General Aggregate: $3,000,000
- Products/Commodity: N/A

**Certificate Number:** 889410220ALI  
**Effective Date:** 08/05/2022  
**Limits:**
- Each Occurrence: $5,000,000
- General Aggregate: $5,000,000

**Description of Operations:**

Certificate Holder is provided a Blanket Additional Insured and Waiver of Subrogation Reference General Liability Policy as required by written contract per terms and conditions of the policy.

Certificate Holder is provided Waiver of Subrogation reference Workers Compensation Policy as required by written contract per terms and conditions of the policy.

---

**Certificate Holder:**

City of Bastrop, TX  
1311 Chestnut Street  
Bastrop, TX 78602

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**Cancellation Notice:**

Should any of the above described policies be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.
30 Day Notice of Cancellation as required by contract.
EVIDENCE OF PROPERTY INSURANCE

THIS EVIDENCE OF PROPERTY INSURANCE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFER NO RIGHTS UPON THE ADDITIONAL INTEREST NAMED BELOW. THIS EVIDENCE DOES NOT AFFIRMATIVELY OR NEVATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS EVIDENCE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE ADDITIONAL INTEREST.

AGENCY
J S EDWARDS & SHERLOCK INSURANCE AGENCY
PO BOX 22237
BEAUMONT, TX 77720-2237

PHONE [AG, No, Ext]: +1 409 832 7736
E-MAIL ADDRESS: lawarna@edwardsandsherlock.com

CODE: 18168454

COMPANY
American Zurich Insurance Company

LOAN NUMBER
POLICY NUMBER
BRT4063017

PROPERTY INFORMATION
LOCATION/DESCRIPTION
1209 Linden Street
Bastrop, TX 78602

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

COVERAGE INFORMATION

<table>
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<tr>
<th>COVERAGE / PERILS / FORMS</th>
<th>AMOUNT OF INSURANCE</th>
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<td>All Covered Property at all Locations</td>
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REMARKS (Including Special Conditions)

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

ADDITIONAL INTEREST

MORTGAGEE
ADDITIONAL INSURED

X LOSS PAYEE

LOAN #

AUTHORIZED REPRESENTATIVE

© 1993-2009 ACORD CORPORATION. All rights reserved.

The ACORD name and logo are registered marks of ACORD
CERTIFICATE OF LIABILITY INSURANCE

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFER NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. IF SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

| PRODUCER | JS EDWARDS/ SHERLOCK | PO BOX 22337, BEAUMONT, TX 77220 |
| CONTACT | NAME: Progressive Commercial Lines Customer and Agent Services | PHONE: 1-800-441-4487 |
| | | FAX: 1-800-441-4487 |
| | ADDRESS: progressivecommercial@email.progressive.com |
| INSURED | SOUTHERN UTILITY WORKS LLC | 1023 INTERSTATE 10 NORTH BEAUMONT, TX 77706 |
| | | |
| | INSURER A: Progressive County Mutual Insurance Company 2023 |
| INSURER B: |
| INSURER C: |
| INSURER D: |
| INSURER E: |
| INSURER F: |

COVERAGES

| COVERAGE | CERTIFICATE NUMBER: 26982441140023454007/02/2022/135735 |
| REVISION NUMBER: |

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

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<tr>
<td>VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)</td>
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</table>

CERTIFICATE HOLDER

CANCELLATION

| CITY OF BASTROP, TX | 1311 CHESTNUT ST |
| BASTROP, TX 78602 |

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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### ADDITIONAL REMARKS

**AGENCY**
JS EDWARDS/ SHERLOCK

**POLICY NUMBER**
03821182

**CARRIER**
Progressive County Mutual Insurance Company

**NAIC CODE**
29203

**EFFECTIVE DATE:** 06/23/2022

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**Additional Coverages**

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<tr>
<td>Uninsured/Underinsured Motorist</td>
<td>$1,000,000 Combined Single Limit</td>
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</table>

Liability coverage may not apply to all scheduled vehicles.

### Additional Information

The policy includes a Waiver of Subrogation for CITY OF BASTROP, TX.

CITY OF BASTROP, TX is listed as an Additional Insured on this commercial auto policy.
CITY OF BASTROP
PUBLIC WORKS DETENTION POND PUMP STATION
FEMA HMGp DR-4272-0024-TX
BEFCO JOB NO. 16-6780
ADDENDUM NO. 3

1. Minimum precast wet well size shall be a minimum 72-inch (72") inside diameter instead of 60 inches.

2. Bids will be received at Bastrop City Hall, 1311 Chestnut Street, Bastrop, Texas 78602 until 10:00 AM on Wednesday, June 15, 2022.

Tim Sanders, P.E.
BEFCO ENGINEERING, INC.
June 14, 2022
CITY OF BASTROP

PUBLIC WORKS DETENTION POND PUMP STATION

FEMA HMGPR DR-4272-0024-TX

BEFCO JOB NO. 16-6780

ADDENDUM NO. 2

1. Size of access hatch shall be 36” x 60” instead of 36” x 48”.

2. The following items shall be submitted with the bid and made a condition of the bid:
   a. Executed Bidder’s Proposal
   b. Statement of Materials and Other Charges
   c. Required Bid Security
   d. Contractor’s Visit Affidavit
   e. Anti-Collusion Affidavit
   f. Statement of Bidder’s Qualifications
   g. Conflict of Interest Questionnaire
   h. Safety Record Questionnaire & Statement of Bidder’s Safety Experience
   i. State Reciprocal Agreement
   j. Form 1295
   k. Verification for Construction Contracts
   l. Federal Certifications Addendum
   m. List of suppliers & subcontractors
   n. List of at least five (5) references of projects similar in size and scope. References shall include name, location, and cost of project along with the owner’s name and the phone number of either the owner or project manager.

3. Bids will be received at Bastrop City Hall, 1311 Chestnut Street, Bastrop, Texas 78602 until 10:00 AM on Wednesday, June 15, 2022.

Tim Sanders, P.E.
BEFCO ENGINEERING, INC.
June 14, 2022
CITY OF BASTROP

PUBLIC WORKS DETENTION POND PUMP STATION

FEMA HMG P DR-4272-0024-TX

BEFCO JOB NO. 16-6780

ADDENDUM NO. 1

1. All items for the project (including establishment of re-vegetation) shall be substantially complete within 180 consecutive calendar days. Final completion of the project shall be within 210 consecutive calendar days.

2. Bids will be received at Bastrop City Hall, 1311 Chestnut Street, Bastrop, Texas 78602 until 10:00 AM on Wednesday, June 15, 2022.

Tim Sanders, P.E.
BEFCO ENGINEERING, INC.
June 10, 2022
SPECIFICATIONS & CONTRACT DOCUMENTS FOR

CITY OF BASTROP

PUBLIC WORKS DETENTION POND PUMP STATION
FEMA HMGP DR-4272-0024-TX

MAYOR
Connie Schroeder

CITY COUNCIL
Cheryl Lee
Drusilla Rogers
Kevin Plunkett
John Kirkland
Jimmy Crouch

CITY MANAGER
Paul Hofmann

BEFCO JOB NO. 16-6780

MAY 2022
prepared by

BEFCO Engineering, Inc.
Post Office Box 615
485 North Jefferson
La Grange, Texas 78945
(979) 968-6474

Texas Registered Engineering Firm #F-2011

www.befcoengineering.com

office@befcoengineering.com

BEFCO ENGINEERING, INC.
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• Statement of Materials and Other Charges
• Bid Bond
• Contractor’s Visit Affidavit
• Anti-Collusion Affidavit
• Form 1295
• Statement of Bidder’s Qualifications
• State Reciprocal Agreement
• Safety Record Questionnaire
• Conflict of Interest
• Verifications ‘or Construction Contracts
• Federal Certifications Addendum

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Agreement

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• Special Specification Item 10 Hydromulch Seeding
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- City of Houston Section 02501 Ductile Iron Pipe and Fittings
- City of Houston Section 02510 Polypropylene (PP) Corrugated Wall Pipe
- City of Houston Section 05501 Metal Fabrications

Contractor's Pay Application Form

Certificate of Owner's Attorney
ADVERTISEMENT AND INVITATION FOR BIDS
Advertisement and Invitation for Bids

The City of Bastrop will receive bids for the Public Works Detention Pond Pump Station Project (FEMA-DR-4272-0024-TX) until 10:00 a.m. on Wednesday, June 15, 2022 at City Hall, 1311 Chestnut Street, Bastrop, Texas 78602. The bids will be publicly opened and read aloud at 10:00 a.m. on Wednesday, June 15, 2022 at said office.

Bids are invited for the Public Works Detention Pond Pump Station Project (FEMA project) as described in the plans and specifications, include duplex pump station, plping/force main, concrete pavement, gravel service road, erosion control, and hydromulch seeding.

Bid/Documents, including Drawings and Technical Specifications, are on file at BEFCO Engineering, Inc., 485 N. Jefferson (P. O. Box 615), La Grange, Texas 78945 (979) 968-6474 and at civcastusa.com.

Copies of the Bid/Contract Documents may be obtained through CIVCAST or by contacting BEFCO Engineering, Inc. via email at office@befcoeengineering.com. Electronic copies may be obtained at no charge; hard copies may be obtained by payment of a non-refundable deposit of $75.00 per set.

A bid bond in the amount of 5% of the bid issued by an acceptable surety shall be submitted with each bid. A certified check or bank draft payable to the City of Bastrop may be submitted in lieu of the Bid Bond.

Questions pertaining to this Invitation for Bid shall be submitted to BEFCO Engineering via e-mail at tim@befcoeengineering.com or by phone at (979) 968-6474 by Thursday, June 9, 2022. Contact with any City representatives besides BEFCO Engineering regarding this Invitation for Bid may be grounds for elimination from the selection process.

The successful bidder may not discriminate against its employees or applicants for employment on the basis of race, color, religion, sex, age or national origin.

The City of Bastrop reserves the right to reject any or all bids or to waive any minor Informalities in the bid documents. The Contract will be awarded to the lowest responsive bidder.

Bids may be held by the City of Bastrop for a period not to exceed 60 days from the date of the bid opening for the purpose of reviewing the bids and investigating the bidders qualifications prior to the contract award.

All qualified applicants shall receive consideration for employment without regard to race, color, religion, sex, or national origin. Bidders will be required to comply with the President's Executive Order No. 11246, as amended by Executive Order 11375, and as supplemented in Department of Labor regulations 41 CFR Part 60.

The successful Bidder shall furnish Performance and Payment Bonds on the forms furnished with the Proposal. In the amount of 100% of the total Contract price, from a surety company holding a permit from the State of Texas to act as surely. The surely company must have a minimum Best Key Rating of "B", or the surety company must be eligible to participate in the surety bond guarantee program of the Small Business Administration and must be an approved surely listed in the current U.S. Department of Treasury Circular 670, and must meet all of the related rules and regulations of the Treasury Department. The surety company and the agency or agent issuing the Payment and Performance Bonds must be authorized to issue and sign Payment and Performance Bonds in Texas in an amount equal to or greater than the total Contract price.

\[Signature\]  
Paul A. Hofmann, City Manager  
City of Bastrop  
5/28/22  
Date
INFORMATION FOR BIDDERS
1. Receipt and Opening of Bids

The City of Bastrop herein called ("Owner"), invites bids on the bid form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the City of Bastrop at City Hall, 1311 Chestnut Street in Bastrop until 10:00 AM on Wednesday, June 15, 2022 and then at said City Hall publicly opened and read aloud. The envelope containing the bid must be sealed, addressed to the City of Bastrop, designated as Public Works Detention Pond Pump Station Project (FEMA HMG P DR-4272-0024-TX), and contain one (1) original hard copy.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

Each bid must be submitted on the prescribed form and the sealed envelope shall bear on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope must be enclosed in another envelope and addressed as specified in the bid form.

2. Subcontracts

The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must receive prior approval from the Owner and Engineer.

3. Qualifications of Bidder

The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigations of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted. See items required with bid.

4. Bid Security

Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety company approved by the Owner, in the amount of 5% of the bid. Such cash, checks or bid bonds will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, checks, or bid bonds
will be returned promptly after the Owner and the accepted bidder have executed the contract, or if no award has been made within 90 days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he has not been notified of the acceptance of his bid.

5. Liquidated Damages for Failure to Enter into Contract

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within 10 days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

6. Time of Completion and Liquidated Damages

Bidder must agree to commence work on or before a date to be specified in written "Notice to Proceed" of the Owner and to fully complete the project within time frame specified on bid form. Bidder must agree also to pay as liquidated damages, the sum of $590 for each consecutive calendar day thereafter as hereinafter provided in the Special Conditions.

7. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally. Every request for such interpretations should be in writing to BEFCO ENGINEERING INC., P.O. BOX 615, LA GRANGE, TEXAS 78945 or on CIVCAST and to be given consideration must be received as least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested to prospective bidders, not later than three days prior to the date fixed for the opening of bids. Addenda so issued may also be faxed to prospective bidders. Failure of any bidder to receive any such addenda or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

8. Security for Faithful Performance

A performance bond or payment bond will not be required if the bid for this contract is less than $25,000. If the bid is $25,000 or more then the contractor shall deliver with the executed contract a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.

9. Power of Attorney

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.
10. Laws and Regulations

The bidder's attention is directed to the fact that all applicable Federal and State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

11. Method of Award - Lowest Qualified Bidder

The Owner reserves the right to waive formalities, to reject any and all bids, to accept bids based on alternate items and quantities specified, and to accept the bid most advantageous to the public interest. Owner also retains right to reduce or increase the total proposal amount by up to 25% by reducing or increasing quantities.

12. Obligation of Bidder

At time of the opening of bids, each bidder will be presumed to have inspected the site, and to have read and to be thoroughly familiar with the plans, specifications and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, plan, specification, or document shall in no way relieve any bidder from any obligation in respect to his bid.

13. The following documents will be attached to the bid and made a condition of this Bid:

A. Executed Bidder's Proposal  
B. Statement of Materials and Other Charges  
C. Required Bid Security  
D. Contractor's Visit Affidavit  
E. Anti-Collusion Affidavit  
F. Statement of Bidder's Qualifications  
G. Conflict of Interest Questionnaire  
H. Safety Record Questionnaire & Statement of Bidder's Safety Experience  
I. State Reciprocal Agreement  
J. Form 1295  
K. Verification for Construction Contracts  
L. Federal Certifications Addendum  
M. List of Subcontractors & Suppliers  
N. List of references and phone numbers of last 5 projects of similar size and scope

Bidder must acknowledge addendas; however, Bidder is responsible for all addendas issued, whether received or not.

03/2022
Proposal of Southern Utility Works LLC, a corporation organized and existing under the laws of the State of Texas, a partnership consisting of N/A, an individual trading as N/A.

TO: Ms. Ann Franklin, City Secretary
    City of Bastrop
    1311 Chestnut Street
    Bastrop, Texas 78602

Gentlemen:

Pursuant to the foregoing Notice to Bidders, the undersigned bidder hereby proposes to do all the work and furnish all necessary superintendence, labor, machinery, equipment, tools and materials, and whatever else may be necessary to complete all the work upon which he bids, as provided by the attached specifications and shown on the plans, and binds himself on acceptance of his proposal to execute a contract and bond, according to the accompanying forms, for performing and completing the said work within the time stated and maintaining same as required by the detailed specifications for the following prices to wit:
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<td>1</td>
<td>LS</td>
<td>Contractor shall excavate, furnish, and install pond pump station including reinforced concrete wet well; gravel and concrete slab foundation; both pumps; ductile iron piping and fittings with coating; piping support; all valves; vent pipe; concrete top slab and gravel base; access hatch; uni-strut rack; electrical controls, enclosures, conduit, and wiring; stainless steel guide rails / pump lifting system; stainless steel cable rack, power cords, and floats; and all other appurtenances required for construction of pond pump station as shown in the plan set and specifications for. Two hundred thousand six hundred eighty two dollars and fifty two cents, complete in place.</td>
<td>$200,682.52</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>54</td>
<td>LF</td>
<td>Furnish and install 18-inch (18&quot;) diameter pond pump station intake pipe for. Four hundred seventy eight dollars and forty six cents per linear foot.</td>
<td>$478.56</td>
<td>25,842.24</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>LS</td>
<td>Furnish and install trash rack on reinforced concrete slab (including gravel base) for. Six thousand one hundred nineteen dollars and sixteen cents, complete in place.</td>
<td>$6119.16</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>SY</td>
<td>Furnish and install 5-inch (5&quot;) thick reinforced concrete slope pavement with 2-foot toe beam all around for. One thousand one hundred ninety five dollars and thirty five cents per square yard.</td>
<td>$1195.35</td>
<td>8375.44</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td>SY</td>
<td>Furnish and install 6-inch (6&quot;) thick reinforced concrete slab around wet well and for pump station piping including 2-foot toe beam all around for. Six hundred eighty dollars and sixty three cents per square yard.</td>
<td>$658.43</td>
<td>9218.04</td>
</tr>
<tr>
<td>6</td>
<td>130</td>
<td>IF</td>
<td>Furnish and install 8-inch (8&quot;) diameter SDR 21 PVC force main for. One hundred seven dollars and ninety four cents per linear foot.</td>
<td>$107.94</td>
<td>14,032.20</td>
</tr>
<tr>
<td>7</td>
<td>112</td>
<td>SY</td>
<td>Furnish and install 8-inch (6&quot;) thick limestone rock base gravel service road including all excavation / fill and subgrade preparation for. Thirty two dollars and thirty two cents per square yard.</td>
<td>$32.32</td>
<td>7160.28</td>
</tr>
<tr>
<td>Item No.</td>
<td>Est. Qty.</td>
<td>Units</td>
<td>Description In Words</td>
<td>Unit Price</td>
<td>Total Price</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
<td>-------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>8</td>
<td>.28</td>
<td>SY</td>
<td>Furnish and install 6-inch (6&quot;) thick reinforced concrete driveway apron including all excavation / fill and subgrade preparation for</td>
<td>$329.22</td>
<td>$9218.04</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>LS</td>
<td>Furnish and install trench safety as required for installation of improvements for</td>
<td>$8,400.00</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>LS</td>
<td>Topsoil, hydromulch seed, fertilize, and provide temporary irrigation (if necessary) to ensure full coverage of grassing for</td>
<td>$4,200.00</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>LS</td>
<td>Furnish and install erosion control measures including filter fabric fence, inlet protection, and stabilized construction entrance (if required) for</td>
<td>$5,73.44 $5,73.44</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL BASE BID (Items 1-11): $291,273.03

The following documents will be attached to the bid and made a condition of this Bid:

A. Executed Bidder's Proposal
B. Statement of Materials and Other Charges
C. Required Bid Security
D. Contractor's Visit Affidavit
E. Anti-Collision Affidavit
F. Statement of Bidder's Qualifications
G. Conflict of Interest Questionnaire
H. Safety Record Questionnaire & Statement of Bidder's Safety Experience
I. State Reciprocal Agreement
J. Form 1285
K. Verification for Construction Contracts
L. Federal Certifications Addendum
M. List of suppliers & subcontractors.
N. List of at least five (5) references of projects similar in size and scope. References shall include name, location, and cost of project along with the owner's name and the phone number of either the owner or project manager.

Bidder must acknowledge addendas; however, Bidder is responsible for all addendas issued, whether received or not.
NOTES:

1. Contractor shall be responsible for temporary pumping of storm water runoff collected within the pond from the beginning to the end of construction. Temporary pumping is considered subsidiary to the work. No separate payment will be made.

2. Encountering groundwater is not anticipated during the course of construction. However, groundwater elevations can vary seasonally. Should groundwater be discovered, Contractor shall notify City and Engineer immediately to determine proper course of action. If only minimal dewatering operations are necessary, this work will be considered subsidiary to the project; and no additional payment will be made. Minimal dewatering operations include those in which a contractor may be required to place a portable pump for periodic discharging of groundwater in order to continue construction of improvements. If significant dewatering operations are necessary such as those in which a well point system or temporary well(s), etc. may be required in order to continue construction of improvements, then a scope of work / change order will be prepared to cover additional costs and time.

3. Traffic control, mobilization, and bond charges are subsidiary to the project and shall be included in the various bid items.

4. Contractor will be required to provide schedule of values for all lump sum items prior to pre-construction meeting and issuance of Notice To Proceed.

5. Contractor shall submit project schedule to the City at the pre-construction meeting. Unless otherwise approved by the City, construction time is to start within ten (10) days after receipt of a written “Notice To Proceed.” All items shall be substantially complete including establishment of re-vegetation within 180 consecutive calendar days.

6. Failure to complete the project within 180 consecutive calendar days will result in liquidated damages of $500 per calendar day.

7. Owner and Contractor shall recognize the potential impact of the COVID-19 virus pandemic on completion of the Work. Governments and private industry worldwide have implemented various measures to contain the spread of the COVID-19 virus. Among others, these measures have included the declarations by local, state, federal, and foreign governments of states of emergency. Both Parties understand and acknowledge that these measures and other consequences of the COVID-19 virus may impact the availability of labor or materials critical to the timely completion of the Work, which, in turn, may cause disruptions related to the Project and completion of the Work. Both Owner and Contractor acknowledge that the impact of the COVID-19 virus is beyond any Parties’ control, and that neither Party is responsible for such impacts. The Owner may be entitled to suspend the Project due to such impacts as may be necessary, and the Contractor may be entitled to an adjustment in time related to such impacts. With respect to any requests for an adjustment of the time period provided for performance, all provisions of the Contract concerning notice and requests for additional time remain in effect. However, in no instance shall Contractor be entitled to any material price increases.

8. All shop drawings shall be submitted to the Engineer within two (2) weeks of receipt of written “Notice To Proceed.” Engineer will review shop submittals within five (5) business days.

9. City may require testing on the project. If required, Contractor shall be responsible for supplying materials for testing; and City shall be responsible for all costs associated with testing. In the event of a failed test, Contractor will be solely responsible for all costs associated with re-tests (i.e., material, testing, etc.).

10. Communications concerning this Bid shall be addressed to the e-mail or business address of Bidder indicated herein.

11. Award of contract shall be based upon lowest, most responsive bid. Owner has right to waive any or all bid irregularities.

12. In the event of discrepancies in unit prices quoted by written words or by numerical value, the written words will prevail. The total bid amount will be adjusted based on written words.

13. Contract documents will govern over the drawings. The order of importance will be Contract, Bond Documents, Special Conditions, City Standard General Conditions and Technical Specifications.

14. Failure to fully complete bid form or submit all forms/attachments with bid may result in the dismissal of bid.

15. The undersigned hereby declares that only the persons or firms interested in the proposal as principal or principals are named herein, and that no other persons or firms than are herein mentioned have any interest in this Proposal or in the contract to be entered into; that this Proposal is made without connection with any other person, company, or parties likewise submitting a bid or proposal; and that it is in all respects for and in good faith, without collusion or fraud.
16. Enclosed with this proposal is a cashier's check or certified check in the amount of 5% of the greatest amount bid (5% of G.A.B.) for ________________________________ ($_________ ) Dollars, or a bid bond in the sum of ________________________________ ($_________ ) Dollars. It is agreed that this bid bond shall be collected and retained by the OWNER as liquidated damages, along with other potential damages as set forth herein, in the event that this proposal is accepted by the OWNER but the undersigned fails to enter into a contract. Such acceptance by the OWNER must be within ninety (90) days after the date advertised for the receipt of bids. Upon receipt of written notice of the acceptance of this bid, BIDDER will execute the formal contract attached within fifteen (15) days and deliver the Performance and Payment Bonds and Insurance Certificates as required under the GENERAL CONDITIONS. The bid security attached in the sum of ________________________________ ($_________ ) is to become the property of the OWNER in the event the contract, bonds, and insurance certificates are not executed or delivered within the time set forth above, as mutually agreed to liquidated damages and not as a penalty for the delay and additional administrative expense to the OWNER caused thereby; otherwise the bid security will be returned upon the signing of the contract and delivering the approved bonds and insurance certificates.

ADDITIONS:

I hereby acknowledge the receipt of the following addenda:

1. WW 6-14-22
2. WW 6-14-22
3. WW 6-14-22

Bidder must acknowledge addenda; however, Bidder is responsible for all addenda issued, whether or not received.

SUBCONTRACTORS: The undersigned BIDDER proposes that he will be responsible to perform major portions of the work at the project site with his own forces and that specific portions of the work not performed by the undersigned will be subcontracted and performed by the following subcontractors.

<table>
<thead>
<tr>
<th>Work Subcontracted</th>
<th>Name of Subcontractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical</td>
<td>Sweeney</td>
</tr>
</tbody>
</table>

The Owner reserves the right to waive formalities, to reject any and all bids, to accept bids based on alternate items and quantities specified, and to accept the bid most advantageous to the public interest. Owner also reserves the right to reduce or increase the total proposal amount by up to 25% by reducing or increasing quantities and/or deleting some bid items.

The undersigned bidder agrees to commence work within ten (10) days after the date of written notice to proceed.

The undersigned hereby declares that he has visited the site and has carefully examined the contract documents relative to the work covered by the above bid.

Respectfully submitted,

BIDDER: Southern Utility Works
ADDRESS: 1025 Eioneer TITLE: COR
Beaumont, TX 77706

TELEPHONE: (281) 382-7224 EMAIL: southernutilityworks@gmail.com

FAX: (____) __________ Seal - if the bidder is a corporation
MATERIALS INCORPORATED INTO THE PROJECT: $104,043.45

ALL OTHER CHARGES: $187,229.58

*TOTAL: $291,273.03

*This total must agree with the contract amount as shown in the bound contract.

For purposes of complying with the Texas Tax Code, the Contractor agrees that the charges for any material incorporated into the project in excess of the estimated quantity provided for herein will be no less than the invoice price for such material to the Contractor.
## BID BOND

<table>
<thead>
<tr>
<th>Bidder</th>
<th>Surety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: Southern Utility Works, LLC</td>
<td>Name: Arch Insurance Company</td>
</tr>
<tr>
<td>Address (principal place of business): 1025 Interstate 10 N Beaumont, TX 77706</td>
<td>Address (principal place of business): 1601 Cherry Street, Suite 1500 Philadelphia, PA 19102</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner</th>
<th>Bid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: City of Bastrop</td>
<td>Project (name and location):</td>
</tr>
<tr>
<td>Address (principal place of business): 1311 Chestnut Street Bastrop, TX 78602</td>
<td>Public Works Detention Pond Pump Station</td>
</tr>
<tr>
<td></td>
<td>FEMA HMGP DR-4272-0024-TX</td>
</tr>
<tr>
<td></td>
<td>Bid Due Date: June 15, 2022</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bond</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bond Amount: 5% of the Greatest Amount Bid</td>
<td></td>
</tr>
<tr>
<td>Date of Bond: June 15, 2022</td>
<td></td>
</tr>
</tbody>
</table>

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

**Bidder**

**Southern Utility Works, LLC**  
_By: [Signature]_
_Name: Walter Wendler  
_Title: Member |

**Surety**

**Arch Insurance Company**  
_By: [Signature] (Attach Power of Attorney)_
_Name: Eric Schmalz  
_Title: Attorney-In-Fact |

**Attest:**  
_Name: [Signature]_  
_Title: Witness |

Name: Christopher Richard  
_Title: Project Supvr |

Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, 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 any difference between the total amount of Bidder’s Bid and the total amount of the Bid of the next lowest, responsible Bidder that submitted a responsive Bid, as determined by Owner, for the work required by the Contract Documents, provided that:

1.1. If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the bond amount set forth on the face of this Bond, and

1.2. In no event will Bidder’s and Surety’s obligation hereunder exceed the bond amount set forth on the face of this Bond.

1.3. Recovery under the terms of this Bond will be Owner’s sole and exclusive remedy upon default of Bidder.

2. Default of Bidder occurs 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 will 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 will not in the aggregate exceed 120 days from Bid due date without Surety’s written consent.

6. No suit or action will 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 the Bid due date.

7. Any suit or action under this Bond must be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder must 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 Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will 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 will 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 governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.

11. The term “Bid” as used herein includes a Bid, offer, or proposal as applicable.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for Note, Loan, Letter of Credit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWERT OF ATTORNEY

Know All Persons By These Presents:
That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the “Company”) does hereby appoint:

Eric Schmulz and Nicole Schmulz of Liberty Hill, TX (EACH)

its true and lawful Attorney(s) in Fact, to make, execute, seal, and deliver from the date of issuance of this power of attorney and on its behalf as surety, and as its act and deed:
Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds in order to bring each such bond within the dollar limit of authority as set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on December 14, 2020, true and authentic copies of which are hereinafter set forth and are hereby certified by the undersigned Secretary as being in full force and effect:

"VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitation set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process."

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by unanimous consent of the Board of Directors of the Company on December 10, 2020:

"VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, and the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile as power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on December 10, 2020, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company."

In Testimony Whereof, the Company has caused this instrument to be signed and its corporate seal to be affixed by their authorized officers, this 26th day of May, 2022.

Attested and Certified

Regan A. Shulman, Secretary

Arch Insurance Company

STATE OF PENNSYLVANIA SS
COUNTY OF PHILADELPHIA SS

I, Michele Tripodi, a Notary Public, do hereby certify that Regan A. Shulman and Stephen C. Ruschak personally know to me to be the same persons whose names are respectively as Secretary and Executive Vice President of the Arch Insurance Company, a Corporation organized and existing under the laws of the State of Missouri, subscribing to the foregoing instrument, appeared before me this day in person and severally acknowledged that they being thereof duly authorized signed, sealed with the corporate seal and delivered the said instrument as the free and voluntary act of said corporation and as their own free and voluntary acts for he uses and purposes therein set forth.

CERTIFICATION

I, Regan A. Shulman, Secretary of the Arch Insurance Company, do hereby certify that the attached Power of Attorney dated May 4, 2022, on behalf of the person(s) as listed above is a true and correct copy and that the same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that he said Stephen C. Ruschak, who executed the Power of Attorney as Executive Vice President, was on the date of execution of the attached Power of Attorney the duly elected Executive Vice President of the Arch Insurance Company.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the Arch Insurance Company on this 16th day of June, 2022.

Regan A. Shulman, Secretary

Arch Insurance Company

To verify the authenticity of this Power of Attorney, please contact Arch Insurance Company at SuretyAuthentic@archinsurance.com

Please refer to the above named Attorney-In-Fact and the details of the bond to which the power is attached.
IMPORTANT NOTICE TO ALL TEXAS POLICYHOLDERS

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Arch insurance Group’s toll-free telephone number for information or to make a complaint at:

1-866-413-5550

You may also write to Arch Insurance Group at:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

1-800-252-3439

You may write the Texas Department of Insurance:

P.O. Box 149091
Austin, TX 78714-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

PREMIUM OR CLAIM DISPUTES:
Should you have a dispute concerning your premium or about a claim you should contact the Arch Insurance Group first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY:
This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener información o para someter una queja:

Usted puede llamar al número de teléfono gratis de Arch Insurance Group para información o para someter una queja al:

1-866-413-5550

Usted también puede escribir a Arch Insurance Group:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

Puede comunicarse con el Departamento de Seguros de Texas para obtener información acerca de compañías, coberturas, derechos o quejas al:

1-800-252-3439

Puede escribir al Departamento de Seguros de Texas:

P.O. Box 149091
Austin, TX 78714-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

DISPUTAS SOBRE PRIMAS O RECLAMOS:
Si tiene una disputa concerniente a su prima o a un reclamo, debe comunicarse con el Arch Insurance Group primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TDI).

UNA ESTE AVISO A SU POLIZA: Este aviso es solo para propósito de información y no se convierte en parte o condición del documento adjunto.
NOTARIZED CONTRACTOR'S VISIT AFFIDAVIT
CONTRACTOR'S VISIT AFFIDAVIT

Walter V. Wender (printed name of representative)
Southern Utility Works, LLC (printed name of company)
visited the site on this the 8th day of June, 2022 for the above referenced job.

(Walter V. Wender) (signature of representative)

ACKNOWLEDGEMENT

The State of TX
County of Jefferson

IN WITNESS WHEREOF the said Representative has executed this instrument this 13th day of June, 2022.

BEFORE ME, the undersigned, a Notary Public in and for said County and State, on this day personally appeared Walter V. Wender known to me to be the persons whose names are subscribed to the foregoing instrument, and acknowledge to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 13th day of June, 2022.

(Seal)

ALLISON AYRES
Notary Public in and for Jefferson County
My Notary ID # 10698213
Commission expires 8/20/23
Expires August 20, 2023
NOTARIZED ANTI-COLLUSION AFFIDAVIT
ANTI-COLLUSION AFFIDAVIT

STATE OF TEXAS
COUNTY OF Jefferson

Before me, the undersigned authority, personally appeared, Walter Wender, Southern Utility Works, who, first being duly sworn, deposed and stated as follows:

My name is Walter Wender. I am over the age of eighteen and am competent to make this affidavit. The facts stated in this affidavit are within my personal knowledge and are true and correct.

I hereby affirm that that this bid is genuine and not in any manner collusive or a sham. Further, I affirm that I have not colluded, conspired, connived, or agreed, directly or indirectly, with any other bidder or any other person to manipulate the bid, to put in a sham bid, nor have I conspired with another person in order to have another person refrain from bidding. I have not in any manner, directly or indirectly, colluded, conspired, connived or agreed with any person to fix the prices proposed and offered by affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price.

Walter Wender
Name
Southern Utility Works
Company

SWORN TO and SUBSCRIBED before me by Walter Wender

on June 13, 2022

Allison Ayres
Notary Public in and for the State of Texas

My Commission Expires: 8/20/2023

BEFCO ENGINEERING, INC.

S:\Projects\16-6780 Public Works Div\Pond Pump Station\Specs & Bid Documents\014 Anti-Collusion Affidavit 0916.doc
ADDITIONAL CONDITION OF AWARD —

DISCLOSURE OF INTERESTED PARTY FORM:
NEW OBLIGATION OF THE CITY TO RECEIVE INFORMATION FROM WINNING BIDDER

Effective January 1, 2016, pursuant to Texas Government Code, Section 2252.908 (the “Interested Party Disclosure Act”), the City may not award a contract to a bidder unless the bidder submits a Certificate of Interested Parties Form 1295 (the “Disclosure Form”) to the City as prescribed by the Texas Ethics Commission (“TEC”).

PROCESS FOR COMPLETING THE DISCLOSURE FORM

The Disclosure Form can be found at https://www.ethics.state.tx.us/forms/1295.pdf, and reference should be made to the following information in order to complete it:
(a) item 2 – Name of City (“City of Bastrop, Texas”)
(b) item 3 – the identification number (“FEMA HMGDP DR-4272-0024-TX) and
(c) item 3 – description of the goods or services assigned to this contract by the City (“Public Works Detention Pond Pump Station”)

You must:
1) complete the Disclosure Form electronically at the TEC’s “electronic portal”, and
2) print, sign and include with bid proposal a copy of the Disclosure Form and Certification of Filing that is generated by the TEC’s “electronic portal.”

The following link will take you to the electronic portal for filing: https://www.ethics.state.tx.us/TECCertInt/pages/login/certLogin.jsf

Also, a detailed instruction video may be found here: https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

Neither the City nor its consultants have the ability to verify the information included in a Disclosure Form, and neither have an obligation nor undertake responsibility for advising any business entity with respect to the proper completion of the Disclosure Form.
1 Name of business entity filing form, and the city, state and country of the business entity's place of business.
Southern Utility Works, LLC
Beaumont, TX United States

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.
City of Bastrop

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.
FEMA HMGPR DR-4272-0024-TX
Construction of Wet Well for water control.

4 | Name of Interested Party | City, State, Country (place of business) | Nature of interest (check applicable) |
---|-------------------------|----------------------------------------|--------------------------------------|

5 Check only if there is NO Interested Party. [X]

6 UNSWORN DECLARATION
My name is Walter Wendler, and my date of birth is 09/03/76.
My address is 1025 TION, Beaumont, TX 77706, USA.

I declare under penalty of perjury that the foregoing is true and correct.
Executed in Jefferson County, State of TX, on the 13th day of June, 2022.

Signature of authorized agent of contracting business entity (Declant)
NOTARIZED STATEMENT OF BIDDER'S QUALIFICATIONS
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 it desires.

Date: June 14, 2022
Bidder (Legal Name of Firm): Southern Utility Works, LLC
Date Organized: Feb 12, 2020
Name of Owner(s): Walter and Kristy Wener
Address: 1025 TRO Nº
          Beaumont, TX 77706
Date Incorporated: Feb 12, 2020
Federal ID Number: 89-4987049
Number of Years in contracting business under present name: 2 yr
List all other names under which your business has operated in the last 10 years: N/A

Work Presently Under Contract:

<table>
<thead>
<tr>
<th>Contract</th>
<th>Amount $</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Pleasant Tank Rehab</td>
<td>$185,000</td>
<td>12-31-22</td>
</tr>
<tr>
<td>Group 2 Lift Station Rehab, City of Beaumont</td>
<td>$350,000</td>
<td>06-20-22</td>
</tr>
</tbody>
</table>

Type of work performed by your company: Water and Sewer Plant Work

Total Staff employed by Firm (Break down by Managers and Trades on separate sheet):

<table>
<thead>
<tr>
<th>Total</th>
<th>1 Superintendent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 Workers</td>
</tr>
</tbody>
</table>

Have you ever failed to complete any work awarded to you? ☐ Yes ☑ No
(If yes, please attach summary of details on a separate sheet. Include brief explanation of cause and resolution)

Have you ever defaulted on a contract? ☐ Yes ☑ No
(If yes, please attach summary of details on a separate sheet.)

Has your organization had any disbarments or suspensions that have been imposed in the past five years or that was still in effect during the five-year period or is still in effect? ☐ Yes ☑ No
(If yes, list and explain; such list must include disbarments and suspensions of officers, principals, partners, members, and employees of your organization.)

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

<table>
<thead>
<tr>
<th>Project</th>
<th>Amount $</th>
<th>Mo/Yr Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Neches EST Rehab</td>
<td>$85,000</td>
<td>April 2022</td>
</tr>
<tr>
<td>Actor Street Lift Station Rehab</td>
<td>$175,000</td>
<td>May 2021</td>
</tr>
<tr>
<td>Dayton EST Rehab</td>
<td>$135,000</td>
<td>Jan 2022</td>
</tr>
</tbody>
</table>

Major equipment available for this contract: F Rent

Are you in compliance with all applicable EEO requirements? ☑ Yes ☐ No
(If no, please attach summary of details on a separate sheet.)
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.

Community Bank of TX
Contact Name: Dan Parker
Address: 5999 Delmar St  City & State: Richmond, TX  Phone Number: 409-861-7200
Zip: 77406  Credit available: $ 150,000

Has the firm or predecessor firm been involved in a bankruptcy or reorganization?  □ Yes  □ No
(If yes, please attach summary of details on a separate sheet.)
N/A

List on a sheet attached hereto all judgements, claims, arbitration proceedings, or suits pending or outstanding against bidder over the last five (5) years with amount of claim and brief description.

List on a sheet attached hereto all lawsuits or requested arbitration with regard to construction contracts which bidder has initiated within the last five (5) years and brief explanation of claim and outcome.  N/A

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

Signed this 14th day of June, 2022  
Walt Wender
Signature
Walter Wender
Printed Name and Title
Southern Utility Works LLC
Company Name

Notary Statement:
Walter Wender, being duly sworn, says that he/she is the GM Position/Title of Southern Utility Works (Firm Name), and hereby swears that the answers to the foregoing questions and all statements therein contained are true and correct. He/she hereby authorizes and requests any person, firm, or corporation to furnish any information requested City/County of in verification of the recitals comprising this Statement of Bidder's Qualifications.

Subscribed and sworn before me this 14th day of June, 2022  
Notary Public
Allison Ayres
Signature
Allison Ayres
Printed Name
My Commission Expires: 8-20-23

ALLISON AYRES
My Notary ID # 10598213
Expires August 20, 2023
Walter V. Wendler
7735 Tloon Drive Beaumont, Texas 77707 • 228-382-7224 • walt@wendlerlawgroup.com

LAW LICENSES – TEXAS, MISSISSIPPI

EDUCATION

Juris Doctor
Regent University, Virginia Beach, Virginia
B.S. Construction Science
Texas A&M University, College Station, Texas

Dec. 2007
May 2000

FAMILY

Married fourteen years to Kristy Michelle Wendler. We have three children, Katelyn Grace, Bronson
Hayes, and Vivian Clair who are 12, 11 and 6 respectively.

PROFESSIONAL EXPERIENCE

Wendler Law Group, PLLC
Law Partner (June 2018 – Present)

➢ Practice law in the following areas: employment immigration, small business, real estate,
wills and estates, and criminal defense.
➢ Transitioned WLG from a sole proprietorship to a PLLC.
➢ Established commercial banking, bookkeeping, and accounting practices for the firm
including trust account policies.
➢ Set up payroll and oversaw the hiring of WLG’s first two employees.
➢ In partnership with my wife, we achieved revenue growth of over 300 percent between
2017 and 2018.
➢ We experienced about 25 percent growth in 2019 and remained steady during 2020
without the aid of the Federal Government’s Paycheck Protection Plan, despite
qualifying for it.
➢ We continue to build the practice primarily serving the Golden Triangle in the area of
immigration law.

Partnership Between Placo, Ltd and Southern Utility Works, LLC
Entered Partnership to Complete Mutually Agreed Contracts (August 2020 – Present)

➢ Performed construction management and superintendence functions to complete the
Astor Street Lift Station Rehab Project. Business was conducted under the Placo, Ltd
name and bonding capacity and all parts of the project were managed and executed by
Southern Utility Works, LLC.
➢ Performed construction management and superintendence functions to complete the
Group 2 Lift Station Rehab Project. Business was conducted under the Placo, Ltd name
and bonding capacity and all parts of the project were managed and executed by Southern
Utility Works, LLC. This project is ongoing.

Bechtel Construction Operations, Inc.
Area Superintendent (October 2016 – June 2018)
Sabine Pass LNG Liquefaction Project, 10+ Billion EPC

➢ Resigned at the completion of the job to help my wife build her burgeoning immigration
practice in Beaumont, TX.
➢ Managed 8 salaried superintendents, 12 field engineers, 2 planners, and various other
non-manual employees.
➢ At peak manpower, responsible for 500 direct hire construction craft professionals.
Managed the construction of site drainage, interconnecting pipe racks, flare stacks, natural gas turbine generators, electrical substations, control buildings, API 650 storage tanks, and a water treatment facility from groundbreaking to system turnover.

My area finished approximately 10% under the original forecast man hour budget and 5 months ahead of the contract schedule.

My area turned over its electrical and mechanical systems with an average of less than 5 punch list items per system; an unprecedented standard of quality for this industry.

Managed employee disputes, disciplinary actions, and had final say on employment terminations for cause.

Planned and scheduled all major construction equipment in accordance with the schedule and project budget.

Major commodities installed in my area included over 250,000 LF of pipe, over one million feet of electrical cable, 5,000 tons of structural steel, and 35,000 CY of concrete.

**Direct Hire Piping Superintendent (June 2014 – October 2016)**

**Sabine Pass LNG Liquefaction Project, 10 Billion EPC**

- Managed a team of 150 subordinate employees in the installation of over 120,000 linear feet of process pipe.
- Provided input to the project CPM schedule. Developed and maintained the three-week look-a-head which included planned quantity and man hour earnings. Developed and maintained the 90-day Work Front Analysis which included planned quantity and man hour earnings.
- Monitored trends in cost and schedule and adjusted execution strategy as necessary.
- Trained foremen and general foremen to plan and allocate manpower based on earnable hours and unit rates.
- Planned and scheduled equipment purchases and rentals. Purchased company provided tools required for pipe fitting and rigging.
- Scheduled material deliveries.

**Systems Turnover Coordinator (June 2012 – May 2014)**

**Pascagoula Base Oil Project, 1.2 Billion EPCM**

- Managed the completion and turnover process of 350 (out of 500 total) civil, structural, electrical, instrumentation, piping and mechanical systems on a 1.2-billion-dollar oil refinery project that included process units, oil storage tanks, and marine terminals.
- Shared management responsibility for the daily activities of 3 administrative assistants.
- Helped develop and implement the procedures that governed the turnover process and built an excellent reputation with the client representatives that received and accepted the turnover product.

**API 650 Flat Bottom Tank Subcontract Coordinator (December 2010 – June 2012)**

**Pascagoula Base Oil Project, 1.2 Billion EPCM**

- Responsible for oversight of the tank erection subcontractor for the design and construction of 15 flat bottom oil storage tanks ranging in size from 42,000 barrels to 300,000 barrels. Lump Sum contract for $32 Million.
- Assisted with the development of the bid evaluation matrix against which all bids were measured.
- Developed the scope of work for the contract.
- Responsible for management of change and drafting change orders post award.
- Scrutinized all contract deliverables such as schedules, execution plans, safety plans, quality control procedures, etc. against the requirements set forth in the contract and API 650.
- Coordinated the activities and logistics of the tank subcontractor where tank work interfaced with other trades or impacted adjacent work.
Received notice of claims from subcontractor ensuring that the contract requirements for notice and filing were followed.

Denied claims under circumstances in which the claim could not be substantiated by contract or industry practice.

Assisted with preparing claims, or defenses to claims, involving the tank erection subcontractor.

**Civil, Coatings, Insulation and Refractory Subcontract Superintendent (October 2008 – December 2010)**

**Continuous Catalyst Reformer Project, 600 Million EPCM**

- Directed the work of each subcontractor on a cost reimbursable basis under a Construction Management contract with the client. Subcontract personnel under my supervision peaked at approximately 350.
- Provided input to the project CPM schedule. Reviewed and approved the three week look-ahead schedule submitted by each subcontractor. Reviewed and approved the 90 day Work Front Analysis submitted by each subcontractor.
- Worked closely with subcontractors to plan and allocate manpower based on earnable hours and unit rates.
- Ensured that each subcontractor executed work in accordance with the contract documents and refinery procedures.

**Union Direct Hire Structural Superintendent (January 2004 – July 2005)**

**San Onofre Nuclear Generation Station DBT Project, $60 Million (EPC)**

- Managed structural steel fabrication and erection of blast proof guard towers and armored structures. Direct hire work force peaked at approximately 75.
- Built work packages in accordance with the plant operating procedure.
- Developed critical lift rigging plans in accordance with the plant operating procedure for lifts occurring near or over “safety critical” plant equipment.

**Piling, Civil, Structural, Coatings, and Insulation Subcontract Coordinator (July 2002 – Dec 2004)**

**Norco Low Sulfur Gasoline Project, 60 Million EPCM**

- Provided oversight of each lump sum subcontractor under a Construction Management contract with Motiva. Subcontract personnel under my responsibility peaked at approximately 275.
- Responsible for oversight of subcontractor Quality Control plan.
- Ensured that each subcontractor executed work in accordance with the contract documents and refinery procedures.
- Coordinated with home office engineering for design changes due to subcontractor change requests or RFIs.

**Field Engineer (May 2000 – July 2002)**

**HOVENSIA Delayed Coker Project, 600 Million EPC**

- Developed and implemented engineered field changes to designs.
- Managed the civil and structural quality control programs responsible for the product of approximately 100 skilled workers.
- Tracked and reported civil and structural construction progress to management for project accounting purposes.
- Identified and tracked change orders against vendors and subcontractors.

**Wendler Law Office**

**Solo Practitioner; Austin, Texas (June 2008 – Sept. 2008)**

- Developed and began to execute a strategy for starting a law practice.
- Represented court appointed clients in misdemeanor criminal cases.
TOBY GLEN DAVIS
2035 CR 3307, Omaha, Tx 75571
(903)563-3409
tobygdavis94@gmail.com

Qualifications/Certifications

• Twic
• NCCER: Advanced Rigger, Ironworker Plus, Foreman, Supervisor V2
• High Performance Crews
• Safety Leadership Workshops
• Construction Science: Planning 101
• Safety Training for Operators of Rough Terrain Forklifts; compliance with 29 CFR 1910.178(1)
• OSHA 10 & 30 hour
• National Welding Inspection School
• Mobile Elevating Work Platform Safety Training
• CPR & First aid Training

Skills

• 20+ years in Construction, Ironworker, Structural Steel Industry
• Rigging/Butt rigging
• Actively participate in all aspects of Safety to achieve zero accidents
• Knowledge in Reading, Understanding Blueprints & Applying them
• Able to identify, address and work with Engineering on construction issues
• Accomplish task in a timely manner
• Excellent management and leadership skills

Work Experience

June 2018-May 2020

CB&I/McDermott-General Foreman Ironworker

• Overseen the unit 1 and unit 2 erection of filter house steel/ duck work/blast walls PCD buildings and enclosures.
• Hold daily morning safety meetings, go over daily toolbox talk, and make sure all employees are fit for duty.
• Ensure all safety procedures were followed & enforced.

May 2018 - June 2018

CB&I/McDermott - Rigging Foreman

• Hired in went to all their classes. Passed all their test. After about five weeks
They ROF me after they rolled over night shift from train 1 to train 2 to day shift.

April 2018 - May 2018

**Bechtel, Portland, Tx CCLNG-General Foreman Ironworker**

- Grating removals so we could put our rigging up to bull rigging.
- Leave out steel and missing iron.
- Detail and punch list items

August 2014 - March 2018

**Bechtel, Cameron, La - General Foreman ironworker**

- Most important responsibility is the safety and health of the crew
- Maintaining safe environment of the jobsite where the job is being performed
- Provide training guidance and administer discipline as required
- Make sure the crew gets the material and the proper documentation to do their job
- Job planning

September 2013 - August 2014

**Becon/Bechtel, Sherman, Tx - Foreman Ironworker**

- Set filter houses
- Cross over pipe
- Detail work
- Punch List
- Rigging/Bull rigging

November 1998 - September 2013

**R.B Narramore & Associates, Mt.Pleasant,Tx - Foreman**

- Worked 15 years Steel Erector Foreman
- Connector/Rigger/Welder & Operator
- Read blue prints & shot elevations

September 2007

**Flour. Monticello Power Plant, Mt.Pleasant,Tx- Boilermaker**

- Worked in the bowl mills

January 2007-August 2007

**Zachry Welch Power Plant, Pittsburg, Tx**

- Boilermaker, Structural Welder, and Pulverizers

March 2006-January 2007

**RSO Pirkey,Welch, & Flint Creek Power Plant**

- Boilermaker, Structural Welder, Pulverizer, Trooper floor, Air Heater, Coal Yard
1997-1998
TWS Construction, Pittsburg Tx
- Welder fabricator, Ironworker, Connector, Rigger

References
Walter Wendler-(228)382-7224
Mark Johnson-(702)610-1448
Ray Lenzee-(618)521-3005
Chris Boyd-(903)204-9322
Ronny Narramore-(903)563-4968
Patrick Hughes-(903)563-9244
City of Bastrop, Texas
Public Works Detention Pond Pump Station
FEMA HMGP DR-4272-0024-TX

List of Subcontractors / Suppliers

Sweeney Electric
Electrical Subcontractor
Logan Sweeney
512-718-3187
PO Box 925
Smithville, TX 78957

Rural Pipe
Pipe Vendor
Tommy Shaver
409-384-5800
809 Visador Rd
Jasper, TX 75951

Smith Pump Company, Inc
Pump Vendor
Jeff McHatlie
512-310-1480
301 MB Industrial Blvd
Waco, TX 76712
City of Bastrop, Texas
Public Works Detention Pond Pump Station
FEMA HMGP DR-4272-0024-TX

List of Project References

City of Dayton, TX;
Roy Rodriguez; 713-204-4792

1) Clayton Well Site Improvement Project ($135,000): Scope included cleaning of an existing ground storage tank, installation of new ductile iron water pipe including hot tap into existing city water main, construction of new bypass piping with control valve and instrumentation, concrete foundation, and demolition of existing structures. All work except electrical was self-performed.

City of Beaumont, TX;
James Boling; 409-553-2685

2) Astor Street Lift Station Project ($160,000): Scope included rehab of an existing lift station including replacement of submersible pumps, installation of new VFD control cabinet, SCADA, transfer switch, main disconnect, meter socket, etc. We constructed a new galvanized steel structure to house the new electrical and control gear. The structure is about 18’ tall and is supported by drilled piers. All work except electrical was self-performed. The City of Beaumont’s contract was with Placo, Ltd. The owner of Placo is retiring and allowed me to use his business and bonding to help get Southern Utility Works started in business. John Plake of Placo can be reached at 409-656-2923.

3) Group 2 Lift Station Rehabilitation Project ($750,000): Scope included the rehabilitation of three lift stations; all like Astor Street above. This work was also performed under the Placo name.

Tanksco, Inc. General Contractor
Andre Raymond; 817-617-9591

4) City of Port Neches elevated storage tank rehab ($85,000): Southern Utility Works subcontracted to Tanksco to install all new ductile iron fill pipe, drain piping, new altitude valve, new concrete slab for altitude valve, new splash box and drain pipe for overflow, sitework, pipe insulation, etc. All work was self-performed.

5) City of Mount Pleasant I-30 Storage Tank Rehab ($185,000): Southern Utility Works subcontracted to Tanksco for the installation of new underground yard piping to two existing tanks, installation of a new pre-fabed ammonianator building and foundation, all new ammonia injection piping, etc. All work self-performed except for the ammonia system and the electrical.
STATE RECIPROCAL AGREEMENT
STATE RECIPROCAL AGREEMENT

City of Bastrop as a governmental agency of the state of Texas, may not award a contract for general construction, supplies, materials, or equipment to a non-resident bidder unless the non-resident’s bid is lower than the lowest bid submitted by a responsible Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid a non-resident bidder to obtain a comparable contract in the state in which the non-resident’s principal place of business is located (article 601G V.T.C.S.). Bidder shall answer all the following questions by encircling the appropriate response or completing the blank provided.

1. Is your principal place of business in the state of Texas?  Yes  No

2. If the answer to question 1 is "yes" no further information is necessary; if "no", please indicate:
   a. In which state your principal place of business is located: 

   b. Does that state favor resident bidders (bidders in your state) by some dollar increment or percentage?  Yes  No

   c. If "Yes", state the dollar increment or percentage: 

NOTARIZED SAFETY RECORD QUESTIONNAIRE
& STATEMENT OF BIDDER’S SAFETY EXPERIENCE
SAFETY RECORD QUESTIONNAIRE
& STATEMENT OF BIDDER'S SAFETY EXPERIENCE
(To Be Submitted With Bid)

Project: City of Bastrop—(FEMA HMGP) Public Works Detention Pond Pump Station

Pursuant to Section 252.0435 of the Local Government Code, City of Bastrop will consider the safety records of potential contractors prior to awarding bids on City of Bastrop contracts. The term "Bidder" includes the firm, corporation, partnership, or other legal entity represented by the Bidder or anyone acting for such firm, corporation, partnership or other entity submitting the bid. The definitions and criteria for determining the safety record of a Bidder are:

"Citations" include notices of violation, notices of enforcement, suspension/revocations of state or federal licenses or registrations, fines assessed pending criminal complaints, indictments, or convictions, administrative orders, draft orders, final orders, and judicial final judgments. Notice of Violations and Notice of Enforcement received from the TCEQ shall include those classified as major violations and moderate violations under the TCEQ's regulations for documentation of Compliance History, 30 Texas Administrative Code, Chapter 60.2 (c) (1) and (2). "Environmental Protection Agency" includes, but is not limited to the Texas Commission on Environmental Quality (TCEQ), the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Texas Department of Health, the Texas Parks and Wildlife Department, the Structural Pest Control Service, agencies of local governments responsible for enforcing environmental protection laws or regulations, and similar regulatory agencies of other states of the United States.

City of Bastrop may consider the responses to each question listed below separately when making a discretionary determination of whether to disqualify a Bidder and it may consider the cumulative impact of the information generated by the Bidder's responses in making the determination.

In order to consider the safety records of potential contractors prior to awarding bids on City of Bastrop contracts, City of Bastrop requires that Bidders answer the following questions and submit them upon request:

**QUESTION ONE**
Has the Bidder received any Citations for violations of OSHA within the past five (5) years?
☐ Yes ☐ No

**QUESTION TWO**
Has the Bidder received any Citations for violations of environmental protection laws or regulations within the past five (5) years?
☐ Yes ☐ No

**QUESTION THREE**
Has the Bidder ever been convicted, within the past ten (10) years, of a criminal offense or has been subject to a judgment for a negligent act or omission, which resulted in serious bodily injury or death?
☐ Yes ☐ No
If the Bidder has indicated "Yes" to any question above, the Bidder must provide to City of Bastrop, with its bid submission, the following information:

Date of Citation or offense and location where violation or offense occurred, type of violation or offense, final disposition of violation or offense, if any, and penalty assessed.

In addition, City of Bastrop will utilize the following information and in its discretion, as additional support to make any discretionary determination of whether to disqualify a Bidder. Accordingly, Bidder must answer the following questions and provide evidence that it meets minimum OSHA construction safety standards and has a lost time injury rate that does not exceed the limits established below:

1. Does the Bidder have a written construction safety program? ☑ Yes ☐ No

2. Does the Bidder conduct regular construction site safety inspections? ☑ Yes ☐ No

3. Does the Bidder have an active construction safety-training program? ☐ Yes ☑ No

4. Does the Bidder or affected subcontractors have competent persons in the following areas (as applicable to the scope of the current Project):
   - A. Scaffolding ☑ Yes ☐ No ☐ N/A
   - B. Excavation ☑ Yes ☐ No ☐ N/A
   - C. Cranes & Hoists ☑ Yes ☐ No ☐ N/A
   - D. Electrical ☑ Yes ☐ No ☐ N/A
   - E. Fall Protection ☑ Yes ☐ No ☐ N/A
   - F. Confined Spaces ☑ Yes ☐ No ☐ N/A
   - G. Material Handling ☑ Yes ☐ No ☐ N/A
   - H. Demolition ☑ Yes ☐ No ☐ N/A
   - I. Steel Erection ☑ Yes ☐ No ☐ N/A
   - J. Underground Construction ☑ Yes ☐ No ☐ N/A

5. Does the company have a lost time injury rate and a total recordable injury rate of less than or equal to the national average for North American Industrial Classification System (NAICS) Category 23 for each of the past five (5) years? (Attach the Bidder's OSHA 300 and 300A logs for the past five (5) years)
   ☐ Yes ☐ No

6. Does the Bidder have an experience modifier rate of 1.0 or less?
   (Attach the Bidder's NCCI workers compensation experience rating sheets for the past five (5) years)
   ☑ Yes ☐ No

7. Has the Bidder had any OSHA inspections within the past six (6) months?
   ☑ Yes ☐ No

   (If "YES", provide sufficient documentation to indicate the nature of the inspection, the findings, and magnitude of the issues.)
ACKNOWLEDGEMENT

THE STATE OF TEXAS
COUNTY OF Jefferson

I certify that my responses and the information provided are true and correct to the best of my personal knowledge and belief and that I have made no willful misrepresentations in this Questionnaire, nor have I withheld any relevant information in my statements and answers to questions. I am aware that any information given by me in this questionnaire may be investigated and I hereby give my full permission for any such investigation and I fully acknowledge that any misrepresentations or omissions in my responses and information may cause my bid to be rejected.

Bidder's full name and entity status:

______________________________
Signature, Authorized Representative of Bidder

______________________________
Title: General Manager

______________________________
Date: 06-14-2022

______________________________
The State of TX
County of Jefferson

BEFORE ME, the undersigned, a Notary Public in and for said County and State, on this day personally appeared Walter Wendler known to me to be the persons whose names are subscribed to the foregoing instrument, and acknowledge to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 14th day of June, 2022.

(SEAL)

ALLISON AYRES
My Notary ID # 10688213
Expires August 20, 2023

Notary Public in and for Jefferson County, Commission expires 8/20/2023
CONFLICT OF INTEREST QUESTIONNAIRE
CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 23, 64th Leg., Regular Session. This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

1. Name of vendor who has a business relationship with local governmental entity.

Southern Utility Works, LLC

2. Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3. Name of local government officer about whom the information is being disclosed.

N/A

4. Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.

N/A

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☐ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

5. Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.

N/A

6. Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

☐

Signature of vendor doing business with the governmental entity

Date 6/30/27

Form provided by Texas Ethics Commission www.ethics.state.tx.us
Revised 11/30/2015
CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:
(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;
(B) a transaction conducted at a price and subject to terms available to the public; or
(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):
(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

(2) the vendor:
(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds $2,500 during the 12-month period preceding the date that the officer becomes aware that
   (i) a contract between the local governmental entity and vendor has been executed; or
   (ii) the local governmental entity is considering entering into a contract with the vendor;
(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than $100 in the 12-month period preceding the date the officer becomes aware that:
   (i) a contract between the local governmental entity and vendor has been executed; or
   (ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)
(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);
(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or
(3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:
   (A) begins discussions or negotiations to enter into a contract with the local governmental entity; or
   (B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or
(2) the date the vendor becomes aware:
   (A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);
   (B) that the vendor has given one or more gifts described by Subsection (a); or
   (C) of a family relationship with a local government officer.
VERIFICATIONS FOR CONSTRUCTION CONTRACTS
VERIFICATIONS FOR CONSTRUCTION CONTRACTS

I, [Company Representative Name], the undersigned representative of [Company or Business Name], verifies the following on behalf of Contractor:

I. **Chapter 2271 – Anti-Boycott of Israel Verification.** By signing and entering into the Contract, Contractor verifies, pursuant to Chapter 2271 of the Texas Government Code, that it is not a Company that boycotts Israel and agrees it will not boycott Israel during the term of this Contract. The terms “boycotts Israel” and “boycott Israel” have the meaning assigned to the term “boycott Israel” in Section 808.001, Texas Government Code. For purposes of this paragraph, “Company” means a for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations that exists to make a profit, but does not mean a sole proprietorship.

II. **Chapter 2252 Verification – Anti-Terrorism Verification.** Contractor hereby represents and warrants that at the time of this Contract neither Contractor, nor any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of Contractor: (i) engages in business with Iran, Sudan, or any foreign terrorist organization pursuant to Subchapter F of Chapter 2252 of the Texas Government Code; or (ii) is a company listed by the Texas Comptroller pursuant to Section 2252.153 of the Texas Government Code. The term “foreign terrorist organization” has the meaning assigned to such term pursuant to Section 2252.151 of the Texas Government Code. For purposes of this paragraph, “Company” means a sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or other entity or business association whose securities are publicly traded, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations, that exists to make a profit.

III. **Chapter 2274 – Anti-Boycott of Energy Companies Verification.** By signing and entering into the Contract, Contractor verifies, pursuant to Chapter 2274 of the Texas Government Code (as added by Senate Bill 13, 87th Texas Legislature, Regular Session), that it is not a Company that boycotts energy companies and agrees it will not boycott energy companies during the term of this Contract. The terms “boycotts energy companies” and “boycott energy companies” have the meaning assigned to the term “boycott energy company” in Section 809.001, Texas Government Code. For purposes of this paragraph, “Company” means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations, that exists to make a profit, but does not include a sole proprietorship.

IV. **Chapter 2274 – Anti-Discrimination of Firearm Entity or Firearm Trade Association Verification.** By signing and entering into the Contract, Contractor verifies, pursuant to Chapter 2274 of the Texas Government Code (as added by Senate Bill 19, 87th Texas Legislature, Regular Session, “SB 19”), that it is not a Company that has a practice, policy, guidance, or directive that...
discriminates against a firearm entity or firearm trade association and agrees it will not discriminate against a firearm entity or firearm trade association during the term of this Contract. The terms “discriminates against a firearm entity or firearm trade association” and “discriminate against a firearm entity or firearm trade association” have the meaning assigned to the term “discriminate against a firearm entity or firearm trade association” in Section 2274.001(3), Texas Government Code (as added by SB 19). For purposes of this paragraph, “Company” means a for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations, that exists to make a profit, but does not mean a sole proprietorship.

V. Chapter 2274 - Lone Star Infrastructure Protection Act Verification. If under this Contract, Contractor is granted direct or remote access to the control of critical infrastructure, excluding access specifically allowed for product warranty and support, Contractor verifies, pursuant to Chapter 2274 of the Texas Government Code (as added by Senate Bill 2116, 87th Legislature Regular Session), that neither Contractor, nor any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of Contractor, nor any of its sub-contractors (i) is owned or controlled by (a) individuals who are citizens of China, Iran, North Korea, Russia or any designated country; or (b) a company or other entity, including a governmental entity, that is owned or controlled by citizens of or is directly controlled by the government of China, Iran, North Korea, Russia, of any designated country; and (ii) is headquartered in China, Iran, North Korea, Russia or a designated country. The term “designated country” means a country designated by the Governor as a threat to critical infrastructure under Section 113.003 of the Texas Business & Commerce Code. The term “critical infrastructure” means a communication infrastructure system, cybersecurity system, electric grid, hazardous waste treatment system, or water treatment facility.

______________________________
Walter Wendor
Name of Company Representative (Print)

______________________________
Walter Wendor
Signature of Company Representative

6/19/2022
Date
FEDERAL CERTIFICATIONS ADDENDUM FOR AGREEMENT FUNDED BY U.S. FEDERAL GRANT
During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor’s noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of
contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

2. **DAVIS-BACON ACT**

**Compliance with the Davis-Bacon Act.**

a. All transactions regarding this contract shall be done in compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) and the requirements of 29 C.F.R. pt. 5 as may be applicable. The contractor shall comply with 40 U.S.C. 3141-3144, and 3146-3148 and the requirements of 29 C.F.R. pt. 5 as applicable.

b. Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor.

c. Additionally, contractors are required to pay wages not less than once a week.
3. COPELAND ANTI-KICKBACK ACT

Compliance with the Copeland "Anti-Kickback" Act.

a. Contractor. The contractor shall comply with 18 U.S.C. §874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.

b. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clause above and such other clauses as FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.

c. Breach. A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. §5.12."

4. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Compliance with the Contract Work Hours and Safety Standards Act.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.
(3) Withholding for unpaid wages and liquidated damages. The City of Bastrop shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

5. CLEAN AIR ACT AND THE FEDERAL WATER POLLUTION CONTROL ACT

Clean Air Act

1. The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

2. The contractor agrees to report each violation to the Smithville and understands and agrees that The City of Bastrop will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

3. The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

Federal Water Pollution Control Act

1. The contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.
2. The contractor agrees to report each violation to The City of Bastrop and understands and agrees that The City of Bastrop will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

3. The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

6. DEBARMENT AND SUSPENSION

Suspension and Debarment

(1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the contractor is required to verify that none of the contractor's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).

(2) The contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

(3) This certification is a material representation of fact relied upon by The City of Bastrop. If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

(4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

7. BYRD ANTI-LOYALTY AMENDMENT


Contractors who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above 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 any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall 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 recipient who in turn will forward the certification(s) to the awarding agency.

8. PROCUREMENT OF RECOVERED MATERIALS

i. In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—
   1. Competitively within a timeframe providing for compliance with the contract performance schedule;
   2. Meeting contract performance requirements; or
   3. At a reasonable price.

ii. Information about this requirement, along with the list of EPA-designated items, is available at EPA’s Comprehensive Procurement Guidelines web site, https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program.

iii. The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act.

ADDITIONAL CONTRACT PROVISIONS

1. ACCESS TO RECORDS

Access to Records. The following access to records requirements apply to this contract:

(1) The Contractor agrees to provide The City of Bastrop the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.

(2) The Contractor agrees to permit any of the foregoing parties to
reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(3) The Contractor agrees to provide the FEMA Administrator or his authorized representatives' access to construction or other work sites pertaining to the work being completed under the contract.

(4) In compliance with the Disaster Recovery Act of 2018, The City of Bastrop and the Contractor acknowledge and agree that no language in this contract is intended to prohibit audits or internal reviews by the FEMA Administrator or the Comptroller General of the United States.

2. CHANGES

There will be no oral changes to this Agreement. This Agreement can only be modified in a writing signed by both parties. Amendments agreed to by both parties may modify the method, price, or schedule of the work without breaching the contract. The language of the clause may differ depending on the nature of the contract and the end-item procured. No charge for extra work or material will be allowed unless approved in writing, in advance, by the City and Contractor.

3. DHS SEAL, LOGO, AND FLAGS

The contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.

4. COMPLIANCE WITH FEDERAL LAW, REGULATIONS, AND EXECUTIVE ORDERS

This is an acknowledgement that FEMA financial assistance will be used to fund all or a portion of the contract. The contractor will comply with all applicable Federal law, regulations, executive orders, FEMA policies, procedures, and directives.

5. NO OBLIGATION BY FEDERAL GOVERNMENT

The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, contractor, or any other party pertaining to any matter resulting from the contract.
6. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS

The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor’s actions pertaining to this contract.

Contractor agrees to comply with all federal, state, and local laws, rules, regulations, and ordinances, as applicable. It is further acknowledged that contractor certifies compliance with all provisions, laws, acts, regulations, etc. as specifically noted above.

Contractors Name: Southern Utility Works, LLC

Address, City, State, and Zip Code: 1025 E 10 N, Beaumont, TX 77706

Phone Number: 28-382-7224

Printed Name and Title of Authorized Representative: Walter Wender General Manager

Email Address: southernutilityworks@gmail.com

Signature of Authorized Representative: [Signature]

Date: 6-14-22
NOTICE OF AWARD
NOTICE OF AWARD

Date of Issuance: July 12, 2022
Owner: City of Bastrop

Engineer: BEFCO Engineering, Inc.

Project: Public Works Detention Pond Pump Station

Contract Name: Public Works Detention Pond Pump Station (FEMA HMGP DR-4272-0024-TX)

Bidder: Southern Utility Works, LLC

Bidder’s Address: 1025 Interstate 10 N, Beaumont, TX 77706

You are notified that Owner has accepted your Bid dated 6/13/2022 for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Public Works Detention Pond Pump Station (FEMA HMGP DR-4272-0024-TX) (Base Bid Items 1-11)

The Contract Price of the awarded Contract is Two Hundred Ninety-one Thousand Two Hundred Seventy-three & 03/100 Dollars ($291,273.03). Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

Four (4) unexecuted counterparts of the Agreement accompany this Notice of Award, and four (4) copies of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☒ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner four (4) counterparts of the Agreement, signed by Bidder (as Contractor).

2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.

3. Other conditions precedent (if any):

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

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: City of Bastrop

By (signature):

Name (printed): Mr. Paul A. Hofmann

Title: City Manager

Copy: Engineer
STANDARD FORM OF AGREEMENT
AGREEMENT BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between _______________ City of Bastrop ______________________ (“Owner”) and ______________________ Southern Utility Works, LLC ______________________ (“Contractor”).

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

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

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

Public Works Detention Pond Pump Station (FEMA HMGP DR-4272-0024-TX)

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

Public Works Detention Pond Pump Station (FEMA HMGP DR-4272-0024-TX)

ARTICLE 3—ENGINEER

3.01 The Owner has retained BEFCO Engineering, Inc. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by BEFCO Engineering, Inc.

ARTICLE 4—CONTRACT TIMES

4.01 Time is of the Essence

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

4.03 Contract Times: Days

A. The Work will be substantially complete within 180 consecutive days after the date when Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.05 of the General Conditions within 210 consecutive days after the date when the Contract Times commence to run.

4.05 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also
recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that: as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner Five Hundred Ninety & No/100 ($590.00) for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete. For the purposes of this project, substantial completion shall be when the pump station and all improvements are operational and ready to use for the intended purpose and re-vegetation has been established.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner Five Hundred Ninety & No/100 ($590.00) for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner’s sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

4.06 Special Damages

A. Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor’s failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.
ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. For all Work other than Unit Price Work, a lump sum of (See Bid Schedule).
   All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

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<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Unit Price</th>
<th>Extended Price</th>
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<td>Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)</td>
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<td>See Bid Schedule</td>
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</tbody>
</table>

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment)
   See Bid Schedule

D. For all Work, at the prices stated in Contractor’s Bid, attached hereto as an exhibit.
   See Bid Schedule

ARTICLE 6—PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

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

6.02 Progress Payments; Retainage

A. Owner shall make progress payments on the basis of Contractor’s Applications for Payment on or about the twenty-eighth (28th) day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial 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 Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. **Ninety (90)** percent of the value of the Work completed (with the balance being retainage).

   1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. **Ninety (90)** percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to **One Hundred (100)** percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less **Two Hundred (200)** percent of Engineer’s estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment. **Alternately, in lieu of the above, Owner may withhold full retainage (10%) until final completion of the project.**

6.03 **Final Payment**

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

6.04 **Consent of Surety**

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 **Interest**

A. All amounts not paid when due will bear interest at the rate of **Zero (0.00)** percent per annum.

**ARTICLE 7—CONTRACT DOCUMENTS**

7.01 **Contents**

A. The Contract Documents consist of all of the following:

   1. This Agreement.
   2. Bonds:
      a. Performance bond (together with power of attorney).
      b. Payment bond (together with power of attorney).
      c. Maintenance bond
   3. General Conditions.
   4. Supplementary (Special) Conditions.
5. Specifications as listed in the table of contents of the project manual.

6. Drawings and pictures (pages 1 to 6, inclusive).

7. Addenda (numbers 1 to 3, inclusive).

8. Exhibits to this Agreement (enumerated as follows):
   a. Contractor's Bid.
   b. Documentation submitted by Contractor prior to Notice of Award.
   c. Affidavit of Site Visit.
   d. Anti-Collusion Affidavit.
   e. Verifications for Construction Contract.
   g. Form 1295
   h. Special Conditions.

9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
   a. Notice to Proceed.
   b. Work Change Directives.
   c. Change Orders.

   B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

   C. There are no Contract Documents other than those listed above in this Article 7.

   D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

   A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

      1. Contractor has examined and carefully studied the Contract Documents, including Addenda.

      2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

      3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

      4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the
Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

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

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

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

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

8.02 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. “Collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. “Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 Standard General Conditions

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or “track changes” (redline/strikeout), or in the Supplementary Conditions.

ARTICLE 9—MISCELLANEOUS

9.01 Independent Contractor

Contractor is an independent contractor and is not an employee of Owner. Nothing in this Agreement is intended, or should be construed, to create a partnership, joint venture or employer-employee relationship between Owner and Contractor.

9.02 No Third-Party Beneficiary

Nothing contained in this Agreement creates any duties of Contractor or Owner toward any entity or individual not a party to this Agreement, except as expressly provided in this Agreement or in the Contract Documents.

9.03 Standard of Care:

Contractor will perform Services under this Agreement with the degree of skill and diligence normally practiced by contractors performing the same or similar services. Except as otherwise provided in this Agreement or by law, Contractor shall have exclusive control over the manner and means of performing the Services, including the choice of place and time and will use its experience, expertise and analytical skills in performing the Services.

9.04 No Waiver of Immunities

Nothing in this Agreement shall be deemed to waive, modify or amend any legal defense available at law or in equity to the Parties hereto, their past, present, or future counsel members, officials, officers, employees, or other agents, nor to create any legal rights or claim on behalf of any third party. Owner does not waive, modify or alter to any extent whatsoever the availability of the defense of Governmental Immunity under the laws of the State of Texas and of the United States.

9.05 Construction

This Agreement shall not be construed against either Party on the basis of who drafted the Agreement.
9.06 Notice

Any notice required or permitted by this Agreement to be given shall be deemed to have been duly given if in writing when delivered personally or five (5) days after mailing by first-class, registered, or certified U.S. mail, return receipt requested, postage prepaid and addressed as follows:

Owner: City of Bastrop
Attention: Mr. Paul A. Hofmann, City Manager
Address: Personal Delivery:
1311 Chestnut Street
Bastrop, Texas 78602

Mail:
1311 Chestnut Street
Bastrop, Texas 78602

Contractor: Southern Utility Works, LLC
Attention: Walter Wendler, General Manager

Mail: 1025 Interstate 10 N
Beaumont, TX 77706

Personal delivery: __________________________

__________________________
IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

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

Owner:

City of Bastrop

By: [Signature]

Date: 8-5-22

Name: Trey Job

Title: Acting City Manager

Attest: [Signature]

Address for giving notices:

1311 Chestnut St. (PO Box 427)

Bastrop, TX 78602

Contractor:

Southern Utility Works, LLC

By: [Signature]

Date: July 25, 2022

Name: Walter Wendler

Title: Member

Attest: [Signature]

Address for giving notices:

1025 Interstate 10 N

Beaumont, TX 77706

Designated Representative:

Name: [Signature]

Title: Member

Address:

Phone: 228-382-7224

Email: southernyutiltywork@gmail.com

License No.: N/A

State: N/A
CONSTRUCTION PERFORMANCE BOND
# PERFORMANCE BOND

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Surety</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name:</strong> Southern Utility Works, LLC</td>
<td><strong>Name:</strong> Arch Insurance Company</td>
</tr>
<tr>
<td><strong>Address (principal place of business):</strong></td>
<td><strong>Address (principal place of business):</strong></td>
</tr>
<tr>
<td>1025 Interstate 10 N</td>
<td>Three Parkway</td>
</tr>
<tr>
<td>Beaumont, TX 77706</td>
<td>1601 Cherry Street, Suite 1500</td>
</tr>
<tr>
<td></td>
<td>Philadelphia, PA 19102</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner</th>
<th>Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name:</strong> City of Bastrop</td>
<td><strong>Description (name and location):</strong></td>
</tr>
<tr>
<td><strong>Mailing address (principal place of business):</strong></td>
<td>Public Works Detention Pond Pump Station</td>
</tr>
<tr>
<td>1311 Chestnut Street</td>
<td>(FEMA HMGD DR-4272-0024-TX)</td>
</tr>
<tr>
<td>Bastrop, TX 78602</td>
<td><strong>Contract Price:</strong> Two Hundred Ninety-One Thousand Two Hundred Seventy-Three &amp; 03/100 Dollars ($291,273.03)</td>
</tr>
<tr>
<td></td>
<td><strong>Effective Date of Contract:</strong> 8/15/22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bond</th>
<th>Modifications to this Bond form:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bond Number:</strong> SU 1181258-0000</td>
<td>☑ None ☐ See Paragraph 16</td>
</tr>
<tr>
<td><strong>Bond Amount:</strong> $291,273.03</td>
<td></td>
</tr>
<tr>
<td><strong>Date of Bond:</strong> 8/15/22</td>
<td></td>
</tr>
</tbody>
</table>
1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

   3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

   3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

   3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

   5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

   5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

   5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

   5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with
said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1. **Balance of the Contract Price**—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2. **Construction Contract**—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3. **Contractor Default**—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4. **Owner Default**—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5. **Contract Documents**—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: [Describe modification or enter “None”]

None
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for Note,Lean, Letter of Credit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:

That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the “Company”) does hereby appoint:

Eric Schmalz and Nicole Schmalz of Liberty Hill, TX (EACH)

its true and lawful Attorney(s-in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed: Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds. In order to bring each such bond within the dollar limit of authority, as set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on December 14, 2020, true and accurate copies of which are hereinafter set forth and are hereby certified to by the undersigned Secretary as being in full force and effect:

VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process.

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on December 10, 2020:

VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, and the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile to any power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on December 10, 2020, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company. In Testimony Whereof, the Company has caused this instrument to be signed and its corporate seal to be affixed by their authorized officers, this 4th day of May, 2022.

Attested and Certified

Regan A. Shulman, Secretary

ARCH INSURANCE COMPANY

STATE OF PENNSYLVANIA SS
COUNTY OF PHILADELPHIA SS

I, Michele Tripodi, a Notary Public, do hereby certify that Regan A. Shulman and Stephen C. Ruschak personally known to me to be the same persons whose names are respectively as Secretary and Executive Vice President of the Arch Insurance Company, a Corporation organized and existing under the laws of the State of Missouri, subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they being thereof duly authorized signed, sealed with the corporate seal and delivered the said instrument as the free and voluntary act of said corporation and as their own free and voluntary acts for he uses and purposes therein set forth.

Michele Tripodi, Notary Public

My commission expires 07/31/2025

CERTIFICATION

I, Regan A. Shulman, Secretary of the Arch Insurance Company, do hereby certify that the attached Power of Attorney dated May 4, 2022 on behalf of the person(s) as listed above is a true and correct copy and that the same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that the said Stephen C. Ruschak, who executed the Power of Attorney as Executive Vice President, was on the date of execution of the attached Power of Attorney the duly elected Executive Vice President of the Arch Insurance Company.

IN TESTIMONY WHEREOF, I have herunto subscribed my name and affixed the corporate seal of the Arch Insurance Company on this 4th day of May, 2022.

Regan A. Shulman, Secretary

ARCH INSURANCE COMPANY

PLEASE SEND ALL CLAIM INQUIRIES RELATING TO THIS BOND TO THE FOLLOWING ADDRESS:
Arch Insurance – Surety Division
3 Parkway, Suite 1500
Philadelphia, PA 19102

To verify the authenticity of this Power of Attorney, please contact Arch Insurance Company at SuretyAuthentic@archinsurance.com
Please refer to the above named Attorney-in-Fact and the details of the bond to which the power is attached.
IMPORTANT NOTICE TO ALL TEXAS POLICYHOLDERS

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Arch Insurance Group's toll-free telephone number for information or to make a complaint at:

1-866-413-5550

You may also write to Arch Insurance Group at:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

1-800-252-3439

You may write the Texas Department of Insurance:

P.O. Box 149091
Austin, TX 78714-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

PREMIUM OR CLAIM DISPUTES:
Should you have a dispute concerning your premium or about a claim you should contact the Arch Insurance Group first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY:
This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener información o para someter una queja:

Usted puede llamar al número de teléfono gratis de Arch Insurance Group para información o para someter una queja al:

1-866-413-5550

Usted también puede escribir a Arch Insurance Group:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

Puede comunicarse con el Departamento de Seguros de Texas para obtener información acerca de compañías, coberturas, derechos o quejas al:

1-800-252-3439

Puede escribir al Departamento de Seguros de Texas:

P.O. Box 149091
Austin, TX 78714-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

DISPUTAS SOBRE PRIMAS O RECLAMOS:
Si tiene una disputa concerniente a su prima o a un reclamo, debe comunicarse con el Arch Insurance Group primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TDI).

UNA ESTE AVISO A SU POLIZA: Este aviso es solo para proposito de informacion y no se convierte en parte o condicion del documento adjunto.
CONSTRUCTION PAYMENT BOND
# PAYMENT BOND

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Surety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: Southern Utility Works, LLC</td>
<td>Name: Arch Insurance Company</td>
</tr>
<tr>
<td>Address (principal place of business): 1025 Interstate 10 N, Beaumont, TX 77706</td>
<td>Address (principal place of business): Three Parkway 1601 Cherry Street, Suite 1500 Philadelphia, PA 19102</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner</th>
<th>Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: City of Bastrop</td>
<td>Description (name and location): Public Works Detention Pond Pump Station (FEMA HMGP DR-4272-0024-TX)</td>
</tr>
<tr>
<td>Mailing address (principal place of business): 1311 Chestnut Street, Bastrop, TX 78602</td>
<td>Contract Price: Two Hundred Ninety-One Thousand Two Hundred Seventy-Three &amp; 03/100 Dollars ($291,273.03)</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Bond</th>
<th>Effective Date of Contract: 8/5/22</th>
</tr>
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<tbody>
<tr>
<td>Bond Number: SU 1181258-0000</td>
<td></td>
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<tr>
<td>Bond Amount: $291,273.03</td>
<td></td>
</tr>
<tr>
<td>Date of Bond: 8/5/22</td>
<td></td>
</tr>
</tbody>
</table>

*(Date of Bond cannot be earlier than Effective Date of Contract)*

Modifications to this Bond form:

☑ None □ See Paragraph 18

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

<table>
<thead>
<tr>
<th>Contractor as Principal</th>
<th>Surety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Utility Works, LLC</td>
<td>Arch Insurance Company</td>
</tr>
<tr>
<td>By: Walter Wendler</td>
<td>By: Nicole Schmalz</td>
</tr>
<tr>
<td>(Signature)</td>
<td>(Signature) (Attach Power of Attorney)</td>
</tr>
<tr>
<td>Name: Walter Wendler</td>
<td>Name: Nicole Schmalz</td>
</tr>
<tr>
<td>(Printed or typed)</td>
<td>(Printed or typed)</td>
</tr>
<tr>
<td>Title: Member</td>
<td>Title: Attorney-In-Fact</td>
</tr>
<tr>
<td>Attest: Chris Richardson</td>
<td>Attest: Eric Schmalz</td>
</tr>
<tr>
<td>(Signature)</td>
<td>(Signature)</td>
</tr>
<tr>
<td>Name: Chris Richardson</td>
<td>Name: Eric Schmalz</td>
</tr>
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</tr>
<tr>
<td>Title: Witness</td>
<td>Title: Witness</td>
</tr>
</tbody>
</table>

*Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is 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 will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner’s property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety’s expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety’s obligations to a Claimant under this Bond will arise after the following:

5.1. Claimants who do not have a direct contract with the Contractor

5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant’s obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety’s expense take the following actions:

7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

7.2. Pay or arrange for payment of any undisputed amounts.

7.3. The Surety’s failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney’s fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1. Claim - A written statement by the Claimant including at a minimum:

16.1.1. The name of the Claimant;

16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

16.1.4. A brief description of the labor, materials, or equipment furnished;
16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. Claimant—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. Construction Contract—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. Owner Default—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. Contract Documents—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: [Describe modification or enter “None”]

None
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Not valid for Note, Loan, Letter of Credit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:

That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the “Company”) does hereby appoint:

Eric Schmalzl and Nicole Schmalzl of Liberty Hill, TX (EACH)

its true and lawful Attorney(s)-in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed:

Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars (90,000,000.00). This authority does not permit the same obligation to be split into two or more bonds in order to bring each such bond within the dollar limit of authority, as set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on December 10, 2020, true and accurate copies of which are hereunto set forth and are hereby certified to by the undersigned Secretary as being in full force and effect:

"VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process."

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on December 10, 2020:

"VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile on any power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on December 10, 2020, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company. In Testimony Whereof, the Company has caused this instrument to be signed and its corporate seal to be affixed by their authorized officers, this 4th day of May, 2022."

Attested and Certified

Regan A. Shulman, Secretary

STATE OF PENNSYLVANIA SS
COUNTY OF PHILADELPHIA SS

I, Michele Trippodi, Notary Public, do hereby certify that Regan A. Shulman and Stephen C. Ruschak personally known to me to be the same persons whose names are respectively as Secretary and Executive Vice President of the Arch Insurance Company, a Corporation organized and existing under the laws of the State of Missouri, subscriber to the forgoing instrument, appeared before me this day in person and severally acknowledged that they being thereunto duly authorized signed, sealed with the corporate seal and delivered the said instrument as the free and voluntary act of said corporation and as their own free and voluntary acts for he uses and purposes therein set forth.

CERTIFICATION

I, Regan A. Shulman, Secretary of the Arch Insurance Company, do hereby certify that the attached Power of Attorney dated May 4, 2022 on behalf of the person(s) as listed above is a true and correct copy and that the same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that the said Stephen C. Ruschak, who executed the Power of Attorney as Executive Vice President, was on the date of execution of the attached Power of Attorney the duly elected Executive Vice President of the Arch Insurance Company.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the Arch Insurance Company on this 20th day of July, 2022.

Regan A. Shulman, Secretary

PLEASE SEND ALL CLAIM INQUIRES RELATING TO THIS BOND TO THE FOLLOWING ADDRESS:
Arch Insurance – Surety Division
3 Parkway, Suite 1500
Philadelphia, PA 19102

To verify the authenticity of this Power of Attorney, please contact Arch Insurance Company at SuretyAuthentic@archinsurance.com
Please refer to the above named Attorney-in-Fact and the details of the bond to which the power is attached.

AICPOA040120

Printed in U.S.A.
IMPORTANT NOTICE TO ALL TEXAS POLICYHOLDERS

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Arch Insurance Group's toll-free telephone number for information or to make a complaint at:

1-866-413-5550

You may also write to Arch Insurance Group at:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

1-800-252-3439

You may write the Texas Department of Insurance:

P.O. Box 149091
Austin, TX 78771-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

PREMIUM OR CLAIM DISPUTES:
Should you have a dispute concerning your premium or about a claim you should contact the Arch Insurance Group first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY:
This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener informacion o para someter una queja:

Usted puede llamar al numero de telefono gratis de Arch Insurance Group para informacion o para someter una queja al:

1-866-413-5550

Usted tambien puede escribir a Arch Insurance Group:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

Puede comunicarse con el Departamento de Seguros de Texas para obtener informacion acerca de companias, coberturas, derechos o quejas al:

1-800-252-3439

Puede escribir al Departamento de Seguros de Texas:

P.O. Box 149091
Austin, TX 78771-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

DISPUTAS SOBRE PRIMAS O RECLAMOS:
Si tiene una disputa concerniente a su prima o a un reclamo, debe comunicarse con el Arch Insurance Group primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TDI).

UNA ESTE AVISO A SU POLIZA: Este aviso es solo para proposito de informacion y no se convierte en parte o condicion del documento adjunto.
MAINTENANCE BOND
Maintenance Bond

THE STATE OF TEXAS § KNOW ALL MEN BY
COUNTY OF Bastrop § THESE PRESENTS:

THAT Southern Utility Works, LLC, as Principal, hereinafter called "Contractor," and
Arch Insurance Company, hereinafter called "Surety," are held and
firmly bound unto the City of Bastrop, Texas, a Municipal Corporation, in Bastrop County, Texas,
hereinafter called "City," in the penal sum of Two Hundred Ninety-One Thousand Two Hundred
Seventy-Three & 03/100 Dollars ($291,273.03), the said sum being 100% percent of the total
amount of the hereinafter mentioned contract, for the payment of which the Contractor and Surety
bind themselves, their heirs, executors, administrators, and successors, jointly and severally.

THE CONDITION OF THIS OBLIGATION is such, that WHEREAS, the said Principal
has entered into a contract with the City for Public Works Detention Pond Pump Station (FEMA
HMGP DR-4272-0034-TX) and WHEREAS, the City has requested that said work be guaranteed
against failure because of defective workmanship or material, performed, or furnished by said
Principal for a full period of two (2) years from the date of final acceptance of the entire project,
normal wear and tear excepted.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if
the Principal shall indemnify the City for all loss that the City may sustain by reason of any
defective materials or workmanship which become apparent during the said maintenance period,
then this obligation to be void, otherwise to remain in full force and effect. PROVIDED, further,
that if any legal action be filed on this bond, venue shall lie in Bastrop County, Texas.

IN WITNESS WHEREOF, this instrument is executed in quadruplicate, each one of which
shall be deemed an original.

SIGNED, SEALED, AND DATED this the 25th day of July, 2022.

PRINCIPAL

Surety

Southern Utility Works, LLC

Arch Insurance Company

By: [Signature]

By: [Signature]

Walter Wendler, Member

ATTORNEY-IN-FACT

Nicole Schmaiz

ATTEST:

[Signature]

SECRETARY

NOTE: POWER OF ATTORNEY OF SURETY MUST BE ATTACHED. DATE OF BOND MUST NOT
BE PRIOR TO DATE OF CONTRACT.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Not valid for Note, Loan, Letter of Credit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:
That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the "Company") does hereby appoint:

Eric Schmalz and Nicole Schmalz of Liberty Hill, TX (EACH)

its true and lawful Attorney-in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed:

Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds in order to bring each such bond within the dollar limit of authority set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on December 10, 2020, true and accurate copies of which are hereto set forth and are hereby certified to be the undersigned Secretary as being in full force and effect:

"VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process."

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on December 16, 2020:

VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, and the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile on any power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on December 10, 2020, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company. In Testimony Whereof, the Company has caused this instrument to be signed and its corporate seal to be affixed by their authorized officers, this 17th day of May, 2022.

Attested and Certified

[Signature]
Regan A. Shulman, Secretary
STATE OF PENNSYLVANIA SS
COUNTY OF PHILADELPHIA SS

I, Michele Tripodi, a Notary Public, do hereby certify that Regan A. Shulman and Stephen C. Ruschak personally known to me to be the same persons whose names are respectively as Secretary and Executive Vice President of the Arch Insurance Company, a Corporation organized and existing under the laws of the State of Missouri, subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they being thereunto duly authorized signed, sealed with the corporate seal and delivered the said instrument as the free and voluntary act of said corporation and as their own free and voluntary acts for the uses and purposes therein set forth.

[Signature]
Michele Tripodi, Notary Public
My commission expires 07/31/2025
Commission Number 1168632

CERTIFICATION

I, Regan A. Shulman, Secretary of the Arch Insurance Company, do hereby certify that the attached Power of Attorney dated May 4, 2022 on behalf of the person(s) as listed above is a true and correct copy and that the same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that the said Stephen C. Ruschak, who executed the Power of Attorney as Executive Vice President, was on the date of execution of the attached Power of Attorney the duly elected Executive Vice President of the Arch Insurance Company.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the Arch Insurance Company on this 24th day of July, 2022.

[Signature]
Regan A. Shulman, Secretary

This Power of Attorney limits the acts of those named therein to the bonds and undertakings specifically named therein and they have no authority to bind the Company except in the manner and to the extent herein stated.

PLEASE SEND ALL CLAIM INQUIRIES RELATING TO THIS BOND TO THE FOLLOWING ADDRESS:
Arch Insurance – Surety Division
3 Parkway, Suite 1500
Philadelphia, PA 19102

To verify the authenticity of the Power of Attorney, please contact Arch Insurance Company at SuretyAuthentic@archinsurance.com
Please refer to the names named Attorney-in-Fact and the details of the bond to which the power is attached.
IMPORTANT NOTICE TO ALL TEXAS POLICYHOLDERS

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1-866-413-5550

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Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

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1-866-413-5550

Usted también puede escribir a Arch Insurance Group:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

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UNA ESTE AVISO A SU POLIZA: Este aviso es solo para propósito de información y no se convierte en parte o condicion del documento adjunto.
NOTICE TO PROCEED
NOTICE TO PROCEED

Owner: City of Bastrop  
Owner’s Project No.: 

Engineer: BEFCO Engineering, Inc.  
Engineer’s Project No.: 16-6780 

Contractor: Southern Utility Works, LLC  
Contractor’s Project No.: 

Project: Public Works Detention Pond Pump Station 

Contract Name: Public Works Detention Pond Pump Station (FEMA HMGP DR-4272-0024-TX) 

Effective Date of Contract: August 5, 2022

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on August 15, 2022 pursuant to Paragraph 4.01 of the General Conditions.  

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.  

In accordance with the Agreement:  
The number of days to achieve Substantial Completion is 180 consecutive calendar days from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of February 10, 2023; and  
the number of days to achieve readiness for final payment is 210 consecutive calendar days from the commencement date of the Contract Times, resulting in a date for readiness for final payment of March 12, 2023. 

Before starting any Work at the Site, Contractor must comply with the following: N/A

Owner:  
City of Bastrop

By (signature):  
F. de Carvalho

Name (printed): Ms. Fabiola M. de Carvalho, MIAM

Title: Director of Engineering & Capital Project Management

Date Issued: 8/15/22

Copy: Engineer

EJCDC® C-550, Notice to Proceed. Copyright© 2018 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.
STANDARD GENERAL CONDITIONS
STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

Prepared By

EJCDC
ENGINEERS JOINT CONTRACT
DOCUMENTS COMMITTEE

ACEC
AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

NPS
NATIONAL SOCIETY OF
PROFESSIONAL ENGINEERS

Endorsed By

CSI
NUCA
Building Knowledge
Improving Project Outcomes
We Dig America
# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. **Addenda**—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. **Agreement**—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. **Application for Payment**—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. **Bid**—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. **Bidder**—An individual or entity that submits a Bid to Owner.

6. **Bidding Documents**—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. **Bidding Requirements**—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. **Change Order**—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. **Change Proposal**—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. **Claim**

   a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by
Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. Constituent of Concern—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. Contract—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. Contract Documents—Those items so designated in the Agreement, and which together comprise the Contract.

14. Contract Price—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. Contract Times—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. Contractor—The individual or entity with which Owner has contracted for performance of the Work.

17. Cost of the Work—See Paragraph 13.01 for definition.

18. Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. Effective Date of the Contract—The date, indicated in the Agreement, on which the Contract becomes effective.

20. Electronic Document—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. Electronic Means—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or
communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. **Engineer**—The individual or entity named as such in the Agreement.

23. **Field Order**—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. **Hazardous Environmental Condition**—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
   
a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
   
b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
   
c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. **Laws and Regulations; Laws or Regulations**—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. **Liens**—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. **Milestone**—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. **Notice of Award**—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. **Notice to Proceed**—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. **Owner**—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. **Progress Schedule**—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. **Project**—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. **Resident Project Representative**—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. **Samples**—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. **Schedule of Submittals**—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. **Schedule of Values**—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. **Shop Drawings**—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. **Site**—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. **Specifications**—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. **Subcontractor**—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. **Submittal**—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. **Substantial Completion**—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part
thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intered. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

Final completion shall be the date on which the entire Work or an agreed portion thereof is complete and the government entity, if applicable, has provided written approval or acceptance of Contractor’s work on the Project or any portion thereof.

43. Successful Bidder—The Bidder to which the Owner makes an award of contract.

44. Supplementary Conditions and Special Conditions—The part of the Contract that amends or supplements these General Conditions. Any reference to Supplementary Conditions shall also mean the Special Conditions document attached hereto.

45. Supplier—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. Technical Data

a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. Underground Facilities—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. Unit Price Work—Work to be paid for on the basis of unit prices.

49. Work—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce...
such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. Work Change Directive—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and F are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. Intent of Certain Terms or Adjectives: The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. Day: The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective: The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;
2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance

A. Performance and Payment Bonds: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. Evidence of Contractor’s Insurance: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. Evidence of Owner’s Insurance: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (.pdf). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.
2.03 Before Starting Construction

A. Preliminary Schedules: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 Preconstruciton Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.
2.06 **Electronic Transmittals**

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient’s use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

**ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE**

3.01 **Intent**

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

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

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.
3.02 Reference Standards

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. Contractor’s Verification of Figures and Field Measurements: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. Contractor’s Review of Contract Documents: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take
precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Requirements of the Contract Documents

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

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.
ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed
A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 100th 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

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

4.03 Reference Points
A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 Progress Schedule
A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

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

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
C. If Contractor’s performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor’s sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions – but only if Contractor is prevented from completing a critical part of the work within the Contract time due to such weather condition. Contractor shall have the duty to demonstrate actual delay in completing the portion of the Work caused by the weather condition. If granted, Contractor will only be allowed non-compensatory time extension;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

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

1. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days’ increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07. Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

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

5.01 Availability of Lands

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

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner’s interest therein, as necessary for giving notice of or filing a mechanic’s or construction lien against such lands in accordance with applicable Laws and Regulations. Note: lands owned by the Owner (City) are not subject to mechanics or construction liens, Payment Bonds are required on public projects instead.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor’s operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the
Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part, by, or based upon, Contractor’s performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. Removal of Debris During Performance of the Work: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading of Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 Subsurface and Physical Conditions

A. Reports and Drawings: The Supplementary Conditions identify:
1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

B. Underground Facilities: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A.
Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. **Reliance by Contractor on Technical Data:** Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. **Limitations of Other Data and Documents:** Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 **Differing Subsurface or Physical Conditions**

A. **Notice by Contractor:** If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. **Engineer's Review:** After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to
the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer’s findings, conclusions, and recommendations.

C. **Owner’s Statement to Contractor Regarding Site Condition**: After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations, in whole or in part.

D. **Early Resumption of Work**: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer’s review or Owner’s issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. **Possible Price and Times Adjustments**

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
   a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
   b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
   c. Contractor’s entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
   a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
   b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor’s making such commitment; or
   c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the subsurface or physical condition in question.

F. Underground Facilities; Hazardous Environmental Conditions: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 Underground Facilities

A. Contractor’s Responsibilities: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. Notice by Contractor: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. Engineer’s Review: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor’s resumption of Work in connection with the Underground Facility in question;
3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer’s findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. Owner’s Statement to Contractor Regarding Underground Facility: After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations in whole or in part.

E. Early Resumption of Work: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer’s review or Owner’s issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:

   a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

   b. Contractor’s entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

   c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available
records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor’s remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 Hazardous Environmental Conditions at Site

A. Reports and Drawings: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

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

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and
in any area affected thereby (except in an emergency as required by Paragraph 7.15); and
(3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing).
Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a
qualified expert to evaluate such condition or take corrective action, if any. Promptly after
consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to
timely obtain required permits and provide Contractor the written notice required by
Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the
Hazardous Environmental Condition in question, then Owner may remove and remediate the
Hazardous Environmental Condition, and impose a set-off against payments to account
for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental
Condition or in any affected area until after Owner has obtained any required permits
related thereto, and delivered written notice to Contractor either (1) specifying that such
condition and any affected area is or has been rendered safe for the resumption of Work, or
(2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if
any, of any adjustment in Contract Price or Contract Times, as a result of such Work
stoppage, such special conditions under which Work is agreed to be resumed by Contractor,
or any costs or expenses incurred in response to the Hazardous Environmental Condition,
then within 30 days of Owner’s written notice regarding the resumption of Work, Contractor
may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such
adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work
based on a reasonable belief it is unsafe, or does not agree to resume such Work under such
special conditions, then Owner may order the portion of the Work that is in the area
affected by such condition to be deleted from the Work, following the contractual change
procedures in Article 11. Owner may have such deleted portion of the Work performed by
Owner’s own forces or others in accordance with Article 8.

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

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and
hold harmless Owner and Engineer, and the officers, directors, members, partners,
employees, agents, consultants, and subcontractors of each and any of them, from and
against all claims, costs, losses, and damages (including but not limited to all fees and
charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 Insurance—General Provisions

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions or the Agreement, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party’s full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party’s obligation to obtain and maintain such insurance.
G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner’s option, may purchase and maintain Owner’s own liability insurance. Owner’s liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner’s liability policies for any of Contractor’s obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker’s compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor’s liability policies) on each Subcontractor’s commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If Contractor, either party does not purchase or maintain the insurance required of such party by the Contract, Contractors such party shall notify the Owner other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor’s entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner’s termination rights under Article 16.

K. Without prejudice to any other right or remedy, if Contractor party has failed to obtain required insurance, the Owner other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party’s interests at the expense of the Contractor party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor’s interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor’s liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.
6.03 Contractor’s Insurance

A. Required Insurance: Contractor shall purchase and maintain Worker’s Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. General Provisions: The policies of insurance required by this Paragraph 6.03 must:

1. include at least the specific coverages required;
2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
5. include all necessary endorsements to support the stated requirements.

C. Additional Insureds: The Contractor’s commercial general liability, automobile liability, employer’s liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
3. afford primary coverage to those additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor’s acts or omissions, or the acts and omissions of those working on Contractor’s behalf, in the performance of Contractor’s operations.

6.04 Builder’s Risk and Other Property Insurance

A. Builder’s Risk: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder’s risk insurance upon the Work on a completed value basis, in the amount of the Work’s full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder’s risk insurance are set forth in the Supplementary Conditions.

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B. **Property Insurance for Facilities of Owner Where Work Will Occur:** Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder’s risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. **Property Insurance for Substantially Complete Facilities:** Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder’s risk insurance. The builder’s risk insurance may terminate upon written confirmation of Owner’s procurement of such property insurance.

D. **Partial Occupancy or Use by Owner:** If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder’s risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder’s risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. **Insurance of Other Property; Additional Insurance:** If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder’s risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor’s expense.

**6.05 Property Losses; Subrogation**

A. The builder’s risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. **Owner and Contractor waives** all rights against **Owner or other** and the respective officers, directors, council members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder’s risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

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2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account,
and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR’S RESPONSIBILITIES

7.01 Contractor’s Means and Methods of Construction

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

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

7.02 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor’s employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor’s own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours (7:30 AM – 5:30 PM), Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner’s written consent, which will not be unreasonably withheld.
7.04 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 "Or Equals"

A. Contractor’s Request; Governing Criteria: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or “or equal” item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an “or equal” item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and
2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. **Contractor’s Expense**: Contractor shall provide all data in support of any proposed “or equal” item at Contractor’s expense.

C. **Engineer’s Evaluation and Determination**: Engineer will be allowed a reasonable time to evaluate each “or-equal” request. Engineer may require Contractor to furnish additional data about the proposed “or-equal” item. Engineer will be the sole judge of acceptability. No “or-equal” item will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an “or-equal,” which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. **Effect of Engineer’s Determination**: Neither approval nor denial of an “or-equal” request will result in any change in Contract Price. The Engineer’s denial of an “or-equal” request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. **Treatment as a Substitution Request**: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

### 7.06 Substitutes

A. **Contractor’s Request; Governing Criteria**: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

   a. will certify that the proposed substitute item will:

      1) perform adequately the functions and achieve the results called for by the general design;

      2) be similar in substance to the item specified; and

      3) be suited to the same use as the item specified.
b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from the item specified; and

2) available engineering, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. Engineer’s Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer’s determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. Special Guarantee: Owner may require Contractor to furnish at Contractor’s expense a special performance guarantee or other surety with respect to any substitute.

D. Reimbursement of Engineer’s Cost: Engineer will record Engineer’s costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. Contractor’s Expense: Contractor shall provide all data in support of any proposed substitute at Contractor’s expense.

F. Effect of Engineer’s Determination: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer’s denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.
7.07 Concerning Subcontractors and Suppliers

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

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

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 Permits

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

7.10 Taxes

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

7.11 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor’s compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor’s responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor’s Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 Record Documents

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

7.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner’s safety programs, if any. Any Owner’s safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor’s safety program with which Owner’s and Engineer’s employees and representatives must comply while at the Site.

I. Contractor’s duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
J. Contractor’s duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 Hazard Communication Programs

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

7.15 Emergencies

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

7.16 Submittals

A. Shop Drawing and Sample Requirements

1. Before submitting a Shop Drawing or Sample, Contractor shall:
   a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
   b. determine and verify:
      1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
      2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
      3) all information relative to Contractor’s responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
   c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor’s obligations under the Contract Documents with respect to Contractor’s review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate
from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. **Submittal Procedures for Shop Drawings and Samples**: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. **Shop Drawings**
   a. Contractor shall submit the number of copies required in the Specifications.
   b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. **Samples**
   a. Contractor shall submit the number of Samples required in the Specifications.
   b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent cata such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. **Engineer’s Review of Shop Drawings and Samples**

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as functioning whole as indicated by the Contract Documents.

2. Engineer’s review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer’s review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer’s review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.
5. Engineer’s review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer’s review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer’s receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer’s time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer’s charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer’s charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
   c. Engineer’s review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.
   d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor’s warranty and guarantee.

B. Owner’s rights under this warranty and guarantee are in addition to, and are not limited by, Owner’s rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor’s warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor’s obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor’s obligation to perform the Work in accordance with the Contract Documents, or a release of Owner’s warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.

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

7.18 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the
design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer’s review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner’s employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner’s employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner’s employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others’ work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor’s Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to
Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor’s Work. Contractor’s failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor’s Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner’s employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

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

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner’s employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor’s failure to take reasonable and customary measures with respect to Owner’s other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor’s failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor’s actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 Communications to Contractor

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

9.02 Replacement of Engineer

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

9.03 Furnish Data

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

9.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.
9.05 Lands and Easements; Reports, Tests, and Drawings

A. Owner’s duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner’s duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 Insurance

A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 Change Orders

A. Owner’s responsibilities with respect to Change Orders are set forth in Article 11.

9.08 Inspections, Tests, and Approvals

A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 Limitations on Owner’s Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor’s failure to perform the Work in accordance with the Contract Documents.

9.10 Undisclosed Hazardous Environmental Condition

A. Owner’s responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 Evidence of Financial Arrangements

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner’s obligations under the Contract (including obligations under proposed changes in the Work).

9.12 Safety Programs

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

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.
ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.01 Owner’s Representative

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

10.02 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer’s efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 Resident Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer’s consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 Engineer’s Authority

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

B. Engineer’s authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer’s authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner’s delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
D. Engineer’s authority as to changes in the Work is set forth in Article 11.
E. Engineer’s authority as to Applications for Payment is set forth in Article 15.

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

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

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

10.08 Compliance with Safety Program
A. While at the Site, Engineer’s employees and representatives will comply with the specific applicable requirements of Owner’s and Contractor’s safety programs of which Engineer has been informed.
ARTICLE 11—CHANGES TO THE CONTRACT

11.01 Amending and Supplementing the Contract

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer’s recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer. Any such amendment must be in writing and signed by duly authorized representatives of Owner and Contractor.

11.02 Change Orders

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner’s acceptance of defective Work under Paragraph 14.04 or Owner’s correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer’s recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 Work Change Directives

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive’s effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.
B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 Field Orders

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

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

11.05 Owner-Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer’s recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor’s safety obligations under the Contract Documents or Laws and Regulations.

11.06 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:
1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. Contractor's Fee: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

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

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 Change Proposals

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

B. Change Proposal Procedures

1. Submittal: Contractor shall submit each Change Proposal to Owner and Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

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

   The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. Engineer's Initial Review: Engineer will advise Owner regarding the Change Proposal, and Owner will consider any comments or response from Owner-Engineer regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. Engineer's Full Review and Action on the Change Proposal: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer and Owner will conduct a full review of each Change Proposal, and, within All Change Proposals regarding Contract Price must be approved by Owner, and any Change Proposals involving a change in Contract Price above or below $50,000 must be
submitted to the City Council for approval; however, the original Contract Price shall not be increased by more than 25 percent. Within 30 days after such receipt of the Contractor’s supporting data, the Owner shall either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Engineer Owner and Contractor. If Engineer—Owner 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—Owner’s inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. Binding Decision: Engineer's—Owner's decision is final and binding upon Owner—and—Contractor, unless Owner—or—Contractor appeals the decision by filing a claim under Article 12.

C. Resolution of Certain Change Proposals: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. Post-Completion: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 Notification to Surety

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

ARTICLE 12—CLAIMS

12.01 Claims

A. Claims Process: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer’s decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B

B. Submittal of Claim: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the
decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor’s knowledge and 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 will be state in writing and submitted to the other party, with a copy to Engineer. Any proposed changes in Contract Price above or below $50,000, whether proposed through a Claim, direct negotiations, mediations, or otherwise, must be submitted to the City Council for approval. The original contract price shall not be increased by more than 25 percent.

D. Mediation

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator’s fees and costs.

E. Partial Approval: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. Denial of Claim: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. Final and Binding Results: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.
ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

A. Purposes for Determination of Cost of the Work: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. Costs Included: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers’ compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers’ field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor’s Cost of the Work and fee will be determined in the same manner as Contractor’s Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

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

c. Construction Equipment Rental

   1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

   2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

   3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

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

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

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

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

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

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

   a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

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

### 13.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. **Cash Allowances**: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. **Owner's Contingency Allowance**: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

### 13.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal
to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor’s overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer’s preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer’s written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. Adjustments in Unit Price

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
   a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
   b. Contractor’s unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor’s costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

14.01 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor’s safety procedures and programs so that they may comply with such procedures and programs as applicable.
14.02 Tests, Inspections, and Approvals

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner’s and Engineer’s acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor’s purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor’s expense unless Contractor had given Engineer timely notice of Contractor’s intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

A. Contractor’s Obligation: It is Contractor’s obligation to assure that the Work is not defective.

B. Engineer’s Authority: Engineer has the authority to determine whether Work is defective, and to reject defective Work.
C. Notice of Defects: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. Correction, or Removal and Replacement: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. Preservation of Warranties: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. Costs and Damages: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

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

14.05 Uncovering Work

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.
ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

A. Basis for Progress Payments: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner’s request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner’s interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor’s legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer’s reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer’s recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer’s observations of the executed Work as an experienced and qualified design professional, and on Engineer’s review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer’s knowledge, information and belief:

   a. the Work has progressed to the point indicated;
b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor’s being entitled to such payment appear to have been fulfilled in so far as it is Engineer’s responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer’s review of Contractor’s Work for the purposes of recommending payments nor Engineer’s recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work;

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

c. for Contractor’s failure to comply with Laws and Regulations applicable to Contractor’s performance of the Work;

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer’s opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer’s opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

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e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Payment Becomes Due

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

E. Reductions in Payment by Owner

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
   a. Claims have been made against Owner based on Contractor’s conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor’s conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
   b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
   c. Contractor has failed to provide and maintain required bonds or insurance;
   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
   e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
   f. The Work is defective, requiring correction or replacement;
   g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
   h. The Contract Price has been reduced by Change Orders;
   i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
   j. Liquidated or other damages have accrued as a result of Contractor’s failure to achieve Milestones, Substantial Completion, or final completion of the Work;
   k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
   l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining
after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner’s refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 Contractor’s Warranty of Title

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

15.03 Substantial Completion

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

B. Promptly after Contractor’s notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner’s objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner’s use or occupancy of the Work following Substantial Completion, review the builder’s risk insurance policy with respect to the end of the builder’s risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of
the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupation

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.
15.06 **Final Payment**

**A. Application for Payment**

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:
   a. all documentation called for in the Contract Documents;
   b. consent of the surety, if any, to final payment;
   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
   d. a list of all duly pending Change Proposals and Claims; and
   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

**B. Engineer's Review of Final Application and Recommendation of Payment**: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer’s recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer’s written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner’s receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

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

15.08 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor’s repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner’s written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner’s written instructions, or in
an emergency where delay would cause serious risk of loss or damage, Owner may have the
defective Work corrected or repaired or may have the rejected Work removed and replaced.
Contractor shall pay all costs, losses, and damages (including but not limited to all fees and
charges of engineers, architects, attorneys, and other professionals and all court or
arbitration or other dispute resolution costs) arising out of or relating to such correction or
repair or such removal and replacement (including but not limited to all costs of repair or
replacement of work of others). Contractor’s failure to pay such costs, losses, and damages
within 10 days of invoice from Owner will be deemed the start of an event giving rise to a
Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days
of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous
service before Substantial Completion of all the Work, the correction period for that item
may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected
or removed and replaced under this paragraph, the correction period hereunder with
respect to such Work will be extended for an additional period of one year after such
correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a
period of not more than 90 consecutive days by written notice to Contractor and Engineer.
Such notice will fix the date on which Work will be resumed. Contractor shall resume the
Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract
Price or an extension of the Contract Times directly attributable to any such suspension. Any
Change Proposal seeking such adjustments must be submitted no later than 30 days after
the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by
Contractor and justify termination for cause:

1. Contractor’s persistent failure to perform the Work in accordance with the Contract
Documents (including, but not limited to, failure to supply sufficient skilled workers or
suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the
Contract Documents;

3. Contractor’s disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor’s repeated disregard of the authority of Owner or Engineer.
B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Charge Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate for Convenience

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in

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connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

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

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

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. Final Resolution of Disputes: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.
ARTICLE 18—MISCELLANEOUS

18.01 Giving Notice

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered to the notice address provided by each party in the Agreement:

1. in person, by a commercial courier service or otherwise, to the recipient’s place of business; or

2. by registered or certified mail, postage prepaid, to the recipient’s place of business; or

3. by e-mail to the recipient, with the words “Formal Notice” or similar in the e-mail’s subject line.

18.02 Computation of Times

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 Limitation of Damages

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 No Waiver

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

18.06 Survival of Obligations

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

A. This Contract is to be governed by the law of the state of Texas, in which the Project is located. Venue for any cause of action under or arising out of this Contract shall be in Bastrop County, Texas.

18.08 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 Successors and Assigns

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

18.10 Headings

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

1. **CONTRACT GOVERNANCE**

In case of conflicts, the order of governance for this contract shall be the Agreement, Bcnd Documents, these Special Conditions, General Contract Conditions, and Technical Specifications.

2. **DESCRIPTION OF WORK**

The project will consist of the City of Bastrop Public Works Detention Pond Pump Station (FEMA HMGp DR-4272-0024-TX). Improvements will include but not to be limited to:

- Duplex Pump Station
- Piping/Force Main
- Concrete Pavement
- Gravel Service Road
- Erosion Control
- Hydromulch Seeding

The CONTRACTOR shall furnish all labor, materials, equipment, tools, services and supervision necessary to perform all the work shown on the Drawings and described in the Specifications and shall deliver the work complete in all respects and in full accordance with the Contract Documents. All incidental services and materials which may be reasonably inferre as necessary to accomplish the intended end result shall be provided by the CONTRACTOR whether or not specifically shown on the Drawings or itemized in the Specifications. The OWNER may require the CONTRACTOR to dismiss from the Project such employees as the OWNER or the ENGINEER shall deem incompetent, careless or insubordinate.

CONTRACTOR shall be responsible for all work executed by him under this Contract, including proper fitting of the work and coordination of the operation of all trades, subcontractors, and material suppliers.

3. **ACCIDENT PREVENTION**

No workers employed in the performance of the Contract shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to the health or safety as determined under construction safety and health standard promulgated by the Secretary of Labor. The CONTRACTOR shall exercise proper precaution at all times for the protection of workers and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his performances of the Contract.

The CONTRACTOR shall maintain an accurate record of all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from work, arising out
of and in the course of employment on work under the Contract. The CONTRACTOR shall promptly furnish the OWNER with reports concerning these matters.

The CONTRACTOR shall indemnify and hold harmless the OWNER from any claims for damages resulting from property damage, personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this Contract.

The CONTRACTOR shall at all times conduct his work in such a manner as to insure the least possible inconvenience to vehicular & pedestrian traffic, and additionally to all landowners. At the close of the work each day, all streets & driveways where possible in the opinion of the OWNER, shall be opened to the public & landowners in order the give the persons their needed access. Barricades, warning signs, and necessary lighting shall be provided to the satisfaction of the OWNER and ENGINEER at the expense of the CONTRACTOR.

The CONTRACTOR shall be required to have an OSHA-approved Fall & Trench Protection Programs and all other required current OSHA-approved programs.

4. **SUPERVISION BY CONTRACTOR**

Except where the CONTRACTOR is an individual and gives his personal supervision to the work, the CONTRACTOR shall provide a competent superintendent, satisfactory to the OWNER and ENGINEER, on the job site at all times during working hours with full authority to act for the CONTRACTOR. The CONTRACTOR shall also provide adequate staff and equipment for the proper coordination and expediting of this work. The CONTRACTOR shall verify all figures and elevations before proceeding with the work and will be held responsible for any error resulting from his failure to do so.

5. **CARE OF WORK**

The CONTRACTOR shall be responsible for all damages to person(s) or property(ies) that occur as a result of his fault or negligence in connection with the execution of the work and shall be responsible for the proper care & protection of all materials delivered and work performed until completion & final acceptance.

The CONTRACTOR shall provide competent personnel to oversee job site(s), both day and night, including weekends & holidays, from the time the work starts until final acceptance.

For emergencies that affect the safety of life(lives), limb(s) or property(ies), including adjoining property(ies), the CONTRACTOR, without instruction or authorization from the OWNER or ENGINEER is authorized to act at his discretion to prevent such threatened loss or injury, and they shall so act. He shall likewise act if instructed to do so by the OWNER during said emergencies.

The CONTRACTOR shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities, properties and all associated
appurtenances, and he shall at his sole expense completely repair any damage to a condition as good or better than before damage occurred or to replace any items damaged by his operations.

The CONTRACTOR shall shore up, brace, underpin, secure, and protect as maybe necessary, all existing structures & entities adjacent to, adjoining, and in the vicinity of the site(s), which may in any way be affected by the operations connected with the Project included in this Contract. The CONTRACTOR shall be responsible for giving of any & all required notices to any adjoining or adjacent property owners or other parties before the commencement of any work. The CONTRACTOR shall indemnify and save harmless the OWNER and ENGINEER from any damages on account of settlements or the loss of lateral support of adjoining property(ies) and from all loss or expense and all damages for which the OWNER and ENGINEER may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

6. **TIME OF COMPLETION**

Construction time is to start ten (10) days after receipt of a written "Notice to Proceed". All items of work contemplated in these Specifications and the accompanying drawings are to be substantially complete within one hundred eighty (180) consecutive calendar days. After the notification of substantial completion and final inspection, CONTRACTOR shall have thirty (30) days to remedy any incomplete or defective work. Failure to achieve substantial completion or final completion within the required timeframes described above will result in liquidated damages in an amount of $590 per calendar day.

7. **LIQUIDATED DAMAGES FOR DELAY**

The CONTRACTOR agrees that a delay in substantial completion of the project beyond the total number of days anticipated for substantial completion plus such extensions to the allotted time as may be provided for in the General Conditions shall cause a damage to the OWNER and that the OWNER may withhold, permanently, from the CONTRACTOR'S total compensation liquidated damages as defined above.

The CONTRACTOR shall not be charged with liquidated damages for any delays in the completion of the work due to:

- Any acts of any branch of Government, including controls or restrictions upon or requisitioning of materials, equipment, tools, or labor by reason of war, national defense, or any other national emergency;
- Causes not reasonably foreseeable by the parties to this Contract at the time of Contract execution, including, but not limited to, acts of God or the public enemy, acts of another Contractor in the performance of some other contract with the OWNER, fires, floods, epidemics, quarantine, restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, cyclones and other extreme weather conditions;
- Provided, however, that the CONTRACTOR promptly notifies the OWNER within ten (10) days in writing of the cause of the delay. Upon receipt of such notification, the OWNER shall ascertain the facts and the cause & extent of delay. If, upon the
basis of the facts and the contract terms, the delay is properly excusable, the
OWNER shall extend the time for work completion for a time period commensurate
with the period of excusable delay.

8. ADDENDA

Bidders desiring further information or interpretation of the plans or specifications must
make such request for such information to the ENGINEER, at least forty-eight (48) hours
before the bid opening. Answers to all such requests will be given in writing to all bidders,
in addendum form, and all addenda will be bound with, and made a part of, the Contract
Documents. No other explanation or interpretation will be considered official or binding.
Should a bidder find discrepancies in, or omissions from, the plans, specifications, or other
Contract Documents, or should he be in doubt as to their meaning, he should at once
notify the ENGINEER in order that a written addendum may be sent to all bidders. Any
addenda issued at least twenty-four (24) hours prior to the opening of bids will be e-
mailed, faxed or otherwise delivered to each CONTRACTOR contemplating the
submission of a proposal on this work. The proposal as submitted by the CONTRACTOR
will be so constructed as to include any addenda, if such are issued by the ENGINEER at
least twenty-four (24) hours of the opening of bids.

9. WARRANTY PERIOD

The successful bidder shall provide the City of Bastrop with a guarantee against defective
materials and workmanship for a period of two (2) years from the date of issuance of
certificate of construction completion. Neither final acceptance nor final payment or any
provision in the contract documents will relieve CONTRACTOR of above guarantee.
Failure to repair or replace defect upon notice entitles OWNER to repair or replace same
and recover reasonable cost thereof from the CONTRACTOR and/or his surety.

10. PERMITS AND RIGHT-OF-WAY

The OWNER will provide right-of-way for the purpose of construction without cost to the
CONTRACTOR by securing permits in areas of public dedication or by obtaining
easements across privately owned property. It shall be the responsibility of the
CONTRACTOR prior to the initiation of construction on easements through private
property, or upon areas of public dedication, to familiarize himself with the requirements of
the pertinent easement or permit and to abide by all the stated terms of such easements
or permits. The CONTRACTOR shall give notice of intent to begin construction on
privately owned property or permitted areas as required by the relevant easement or
permit but in no case less than forty-eight (48) hours before commencing work.

11. PROPERTY LINES AND MONUMENTS

The CONTRACTOR shall protect all property corner markers, and when any markers or
monuments are in danger of being disturbed, they shall be properly referenced and if
disturbed shall be reset at the expense of the CONTRACTOR.
12. **REFERENCE SPECIFICATIONS**

Where reference is made in these specifications to specifications compiled by other agencies, organizations or departments, such reference is made for expediency and standardization from the material supplier's point of view, and such specifications referred to are hereby made a part of these specifications.

Whenever reference is made to the furnishing of materials or testing thereof to conform to the standards of any technical society, organization, or body, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the time of advertisement for bids, even though reference has been made to an earlier standard, and such standards are made a part hereof to the extent which is indicated or intended.

**STANDARD ABBREVIATIONS**

ASTM. American Society for Testing Materials.
AASHTO. American Association of State Highway Officials.
ASA. American Standards Association.
API. American Petroleum Institute.
AWS. American Welding Society.
NEMA. National Electrical Manufacturers Association.
EEI. Edison Electric Institute.
IES. Illuminating Engineering Society.
UL. Underwriters Laboratory, Inc.
AAN. American Association of Nurserymen.
AWG. American Wire Gauge.
BPR. The United States Bureau of Public Roads.
IMSA. International Municipal Signal Association.
ITE. Institute of Traffic Engineers.
NBFU. National Board of Fire Underwriters.
NEC. National Electric Code (Published by NBFU).
AWWA. American Water Works Association.
AISC. American Institute of Steel Construction.
ASCE. American Society of Civil Engineers.
SSPC. Steel Structures Painting Council.

13. **SHOP DRAWINGS**

The CONTRACTOR shall supply to the ENGINEER copies of shop and erection drawings, schedules and data sheets covering items of construction and equipment listed below:

(a) Structural and miscellaneous steel, and fabricated piping.
(b) Valves
(c) Coatings
(d) Intake & Force Main Piping
(e) Concrete Mix Design
(f) Reinforcing Steel
(g) Precast Concrete Wet Well
(h) Pumps
(i) Electrical equipment, including instrument, controls and complete wiring
(j) Any item that may deviate from stated design.
(k) Special items, as directed.

Submittals called for in the Contract Documents shall be submitted promptly after contract award and acceptance of the CONTRACTOR'S bonds.

CONTRACTOR will check and approve shop drawings for compliance with requirements of Contract and will so certify by stamp on each drawing prior to submittal to ENGINEER. Any drawings submitted without CONTRACTOR'S stamp of approval will not be considered and will be returned to him for proper submission.

ENGINEER will promptly pass upon drawings submitted, noting necessary corrections or revisions. If ENGINEER rejects drawings, the CONTRACTOR shall resubmit corrected drawings until drawings are acceptable to ENGINEER as being in conformance with design concept of project and in compliance with information given in the Contract Documents. Acceptance of drawings by ENGINEER does not relieve CONTRACTOR of any requirements of terms in Contract. Two (2) copies of approved submittals will be returned to CONTRACTOR.

No such materials or equipment shall be manufactured or delivered to the site, except at the CONTRACTOR'S own risk, until the required samples or certificates have been approved in writing by the ENGINEER. Any delay in the work caused by late, erroneous, or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the contract time.

Approval of any materials or equipment shall be general only and shall not constitute a waiver of the OWNER'S right to demand full compliance with the Contract Documents. After actual deliveries, the ENGINEER may employ check test made as they deem necessary in each instance and may reject materials, equipment & accessories for cause, even though such materials and articles have been given general approval. If materials, equipment & accessories which fail to meet the check test have been incorporated in the work, the ENGINEER will have the right to cause their removal & replacement by proper materials or to demand & secure such reparation by the CONTRACTOR as is equitable.

The costs for sampling & testing will be as follows:

- The CONTRACTOR shall furnish without cost, including packing & delivery charges, all samples required for testing purposes, except those samples taken on the project by the ENGINEER;
- The CONTRACTOR shall assume all costs of re-testing materials and re-inspection of workmanship which fail to meet contract requirements;
- The CONTRACTOR shall assume all costs of testing materials offered in substitution for those found deficient;
- The OWNER will pay all other expenses.
14. MATERIALS AND EQUIPMENT

Incorporate into work only new materials unless otherwise designated and the best grade of the respective kinds for the purpose. All equipment shall be in working condition and shall be operated by competent personnel. All materials and equipment shall be stored in such a manner so as to protect them from damage.

No materials, supplies, or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease-purchase or other agreement by which an interest is retained by the seller or supplier. The CONTRACTOR shall warrant good title to all materials, supplies & equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed by him to the OWNER free from any claims, liens, or charges. Neither the CONTRACTOR nor any person, firm, or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any law permitting such persons to look to funds due the CONTRACTOR in the hands of the OWNER. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

15. SUBSTITUTION OF MATERIALS

Where a product is specified, followed by the phrase "or equal", the product mentioned is intended to set standards of quality, function and appearance. If the CONTRACTOR desires to substitute a material or method as an equal to a specified item, he shall within ten days after award of contract, request permission from the ENGINEER, in writing, and shall submit such literature, samples, etc., as may be necessary to establish the equal quality of his proposal. If the ENGINEER deems it necessary in order to establish the equality between two or more products, he may require laboratory testing at the CONTRACTOR'S expense in order to obtain information upon which to base a decision. After consideration of the material submitted, the ENGINEER will advise the CONTRACTOR in writing of his acceptance or rejection. No substitutions will be permitted without ENGINEER'S prior written approval. Machinery, mechanical or other equipment, materials or articles installed or used without such prior approval shall be at the risk of subsequent rejection.

16. MATERIALS TESTING

Testing may be required on this Project. If required, CONTRACTOR shall be responsible for supplying materials required for testing and City shall be responsible for all costs associated with testing. Any costs associated with re-tests due to failure will be the sole responsibility of the CONTRACTOR.
17. WATER FOR CONSTRUCTION

Water used for the mixing of concrete, jetting or flooding trenches, or testing, or any other purposes incidental to this project, will be furnished by the OWNER to the CONTRACTOR. If water is obtained from the OWNER’S water supply, the CONTRACTOR shall make the necessary arrangements for securing and transporting such water and shall take such water in a manner and at such times that will not produce a harmful drain or decrease pressure in the owner's water system. There will be no charge to CONTRACTOR for water used in the construction of this Project that is obtained from the OWNER; however, CONTRACTOR shall make communication with the OWNER about where, when and how to connect to the OWNER’S water system. CONTRACTOR will also be required to provide the OWNER with an accounting of water used for their record keeping purposes.

18. LINES AND GRADES

All construction staking and layout shall be the responsibility of the CONTRACTOR. CONTRACTOR shall verify all figures and elevations before proceeding with the work and will be responsible for any error resulting from his failure to do so.

19. LOCATION OF AND DAMAGE TO EXISTING UTILITIES

The CONTRACTOR shall notify Texas One Call and all private and public utilities at least 48 hours prior to performing any work in the vicinity of said utilities. Such 48-hour notice shall not include Saturdays, Sundays and Holidays.

The CONTRACTOR shall be solely responsible for all utilities, structures, and appurtenances in regard to protection and replacement or repair of same. The cost of protecting, replacing, or repairing the utilities, structures, and appurtenances covered by this paragraph shall be borne solely by the CONTRACTOR and shall be included in the prices bid for the various affected items in the Contract.

20. SITE MAINTENANCE AND CLEANUP

Maintain the project sites and public rights-of-way during construction neat and free of trash, rubbish or other debris. In cleanup operations, remove from site temporary structures, rubbish and waste materials, and leave site in a neat and presentable condition throughout. CONTRACTOR shall legally dispose of excavated material beyond that which is needed to bring site to required final elevations. Upon completion of the work, the CONTRACTOR shall remove all temporary construction facilities, debris, and unused materials provide for the work, and put the whole site of the work and public rights of way in a neat and clean condition, the same or better than prior to construction.

CONTRACTOR shall provide written manifests to the OWNER regarding proper disposal of said materials.
21. MEASUREMENT AND PAYMENT

Estimated quantities shown in the Contract Documents are provided solely for the purpose of allowing a uniform comparison of submitted bids. Payment will be made on either the basis of actual measured quantities or a lump sum as may be relevant to the particular item. For those items for which payment is based on actual measured quantities, the CONTRACTOR shall verify all measurements at the site and shall be responsible for the correctness of same. Unit prices shall then be used to calculate payment. Methods of measurement shall be given in the Technical Specifications for each measured item.

For those items for which payment is based on "lump sum", the amount of the bid shall be the full compensation for the performance of the particular item of work. It shall be the CONTRACTOR'S full responsibility to satisfy himself of the requirements of the Contract Documents, in regard to the item of work for which a lump sum bid is requested, prior to submitting his bid. No allowances will be made to the CONTRACTOR, by reason of any error on his part due to his neglect to comply with the requirements of this clause.

Changes made in the design, and/or requirements of the contract documents, in regard to an item of work which a lump sum bid is requested after bids have been submitted, shall be paid for in accordance with Article 11 of the General Conditions of the Agreement.

22. PAYMENTS TO CONTRACTOR

The CONTRACTOR shall prepare five (5) copies of pay requests on or about the 28th of the month and submit to the ENGINEER for approval. ELECTRONIC SUBMITTALS WITH COLORED SIGNATURES ARE AN ACCEPTABLE ALTERNATIVE. The amount of payment to the CONTRACTOR shall be determined by the sum of the total value of work completed to date, value of materials purchased & properly stored on the project site(s), and deducting the applicable retainage & amount of previous payments. The total value of work completed to date shall be based upon the actual quantities of work completed and on unit prices contained in the Contract.

Monthly or partial payments made by the OWNER to the CONTRACTOR are moneys advanced for the purpose of assisting the CONTRACTOR to expedite the work of construction. The CONTRACTOR shall be responsible for the care and protection of all materials and work upon which payments have been made until final acceptance of such work and materials by the OWNER. Such payments shall not constitute a waiver of the right of the OWNER to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in the Contract complete and satisfactory to the OWNER in all details.

Each payment to the CONTRACTOR shall be made subject to the submission by the CONTRACTOR of all written certifications required of him and his subcontractors.

The OWNER may withhold any payment, including final payment, due the CONTRACTOR, whatever is deemed necessary to protect the OWNER, and if it so elects, may also withhold any amounts due from the CONTRACTOR to any subcontractors or material suppliers, for work performed or material furnished by them. The foregoing
provision shall be construed solely for the benefit of the OWNER and will not require the OWNER to determine or adjust any claims or disputes between the CONTRACTOR and his subcontractors or material providers, or to withhold any moneys for the protection unless the OWNER elects to do so. The failure or refusal of the OWNER to withhold any monies from the CONTRACTOR shall in no way impair the obligations of any surety or sureties under any bond or bonds furnished under this Contract.

23. **PAYMENT FOR MATERIALS ON SITE**

CONTRACTOR shall present to the OWNER with his monthly estimate of production and request for payment a list of all material delivered to the project site, but not installed, with the total invoice cost of that material and the OWNER shall pay to the CONTRACTOR the invoice cost of such material as has been verified by the ENGINEER to be "on site", less retainage. "On site" shall mean on or immediately adjacent to the work area or point of material installation, or a central storage yard or office area that has been set up for the project in the immediate project area. This does not include material in transit to the job site, material stored in yards or areas located in other towns, or materials stored in a manufacturer's warehouse, even though CONTRACTOR may have been invoiced for such material. CONTRACTOR shall be required to provide ENGINEER with copies of all invoices for materials they are requesting to be paid for.

24. **STATE SALES TAX**

City of Bastrop does qualify as an exempt organization under the Limited Sales Excise Tax Rules and Regulations of the State of Texas. Since the OWNER and the CONTRACTOR shall be exempt from the state sales tax, the state sales tax shall not be included in the Bid. Prior to the execution of the Contract, the CONTRACTOR shall obtain a Limited Sales Tax Permit and shall show evidence of this permit when signing the Contract. The CONTRACTOR shall then issue Resale Certificates in lieu of payment of the sales tax, on material purchased for incorporation into the project. These instructions are in strict compliance with the State Sales Tax Act, Section I, Chapter 20, Title 112A, Taxation General, Revised Civil Statutes of Texas, 1925, and the Comptroller's Rulings interpreting said Act. The CONTRACTOR is assumed to be fully aware of the sales tax regulations and agrees to cooperate fully with the OWNER in claiming its lawful exemption from the state sales tax.

25. **RETAI N A GE**

The OWNER will retain from the CONTRACTOR'S monthly estimate the request for payment an amount equal to 10% of the invoiced amount. This 10% shall be retained by the OWNER until final acceptance of the total project and then paid to the CONTRACTOR.

26. **FINAL PAYMENT**

After final inspection and acceptance by the OWNER of all work under the Contract, the CONTRACTOR shall prepare the final payment which shall be based upon the careful inspection of each work item at the applicable unit prices stipulated in the Contract. The
total amount of the final payment due to the CONTRACTOR under this Contract shall be the amount computed as described above in the Payments to Contractor less all previous payments.

The OWNER shall require the CONTRACTOR to furnish notarized releases or receipts from all subcontractors having performed any work and material providers which have provided materials, equipment and services to the CONTRACTOR. Final payment will not be made until the CONTRACTOR has provided the OWNER with a copy of record drawings, Notarized Affidavit of All Bills Paid & Release of Lien, and the Certificate of Construction Completion has been executed by all applicable parties.

Any Liquidated Damages and Claims due to the OWNER shall be deducted from the final payment due the CONTRACTOR.

### 27. COMPENSATION, PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE

Each and every CONTRACTOR performing work at the site of the project shall not commence work until he has obtained all the insurance required under this paragraph nor shall the CONTRACTOR allow any subcontractor to commence work until he has obtained all similar insurance required of the subcontractor. Each and every CONTRACTOR and subcontractor shall take out and maintain during the course of this project adequate Workmen’s Compensation Insurance as shall protect him from any subcontractor’s personal injury, including wrongful death, as well as from claims for property damages which may arise from operations under this contract, or in any way connected therewith. The minimum amounts of such insurance shall be as follows:

<table>
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<tr>
<th>Insurance Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workmen’s Compensation and Employer’s Liability:</td>
<td>Comply in amount with all applicable State of Texas Statutes, but in compliance with amounts listed on Sample Insurance Certificate.</td>
</tr>
<tr>
<td>General Liability:</td>
<td>$1,000,000 for injuries to 1 person.</td>
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<tr>
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<td>$1,000,000 for each occurrence.</td>
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<tr>
<td></td>
<td>$2,000,000 for general aggregate.</td>
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<tr>
<td>Property Damage:</td>
<td>$1,000,000.</td>
</tr>
<tr>
<td>Automobile Property Damage:</td>
<td>$1,000,000.</td>
</tr>
<tr>
<td>Automobile Public Liability:</td>
<td>$1,000,000 for combined single limit.</td>
</tr>
<tr>
<td>Umbrella Liability:</td>
<td>$2,000,000 for each occurrence.</td>
</tr>
<tr>
<td>Excess Liability:</td>
<td>$2,000,000 for aggregate.</td>
</tr>
<tr>
<td>Property Insurance/</td>
<td>Per Section 6.04 of the General Conditions,</td>
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<tr>
<td>Builder’s Risk All-Risk/</td>
<td>EJCDC C-700. For this project shall be full value of</td>
</tr>
<tr>
<td>Installation Floater</td>
<td>materials for the entire contract.</td>
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</tbody>
</table>
NOTE: General aggregate limit applies per project, not per policy. Automobile insurance shall cover all automobiles and trucks owned by the CONTRACTOR. See attached sample for required information.

For the terms covered under this contract, the City of Bastrop and BEFCO Engineering Inc. shall be named as additional insured with respect to general liability. City of Bastrop shall be listed as the Certificate Holder.

The CONTRACTOR shall furnish the OWNER with certificates showing the type, amount, class of operations covered, effective date and date of expiration of policies. Such certificates shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered, except after thirty (30) days written notice has been received by the Locality."

28. TRENCH SAFETY REQUIREMENTS

CONTRACTOR shall perform all trench excavation in compliance with OSHA regulations 29 CFR 1926 Subpart P - Excavation, Trenching, and Shoring. In accordance with HG 1569, a separate pay item for trench safety has been included in the Bid Proposal for all force main as well as gravity main or other construction trench excavations. All other applicable requirements of H.B. 1569 shall also be adhered to.

29. TRAFFIC CONTROL

It will be the CONTRACTOR’S responsibility to adequately provide for the safety of the public during the course of the construction of the project. Flagmen, if required, will be provided at the CONTRACTOR’S cost. No separate compensation will be paid to the CONTRACTOR for traffic control.

30. PROJECT MEETINGS

Prior to starting work, the CONTRACTOR shall attend a pre-construction conference to review schedules, to establish procedures for processing applications for payment, and to establish a working understanding between OWNER, ENGINEER and CONTRACTOR. Representatives of all parties shall be in attendance. Other meetings will be scheduled during construction as the need dictates.

31. STORMWATER POLLUTION AND PREVENTION PLAN (SWPPP)

CONTRACTOR shall be responsible for furnishing and implementing a SWPPP. This work is considered subsidiary to the project. As such, cost of SWPPP shall be included in the various bid items. No separate payment will be made.

32. SUBCONTRACTS

The CONTRACTOR shall be responsible for a majority of the work and shall not subcontract more than 50% of the work without written approval of the OWNER. The 50% shall exclude specialty work such as boring, hot taps, and pavement repair. The
CONTRACTOR shall not execute an agreement with any subcontractor or permit any subcontractor to perform any work included in the contract until that subcontractor has been approved by the OWNER and ENGINEER. The CONTRACTOR shall be fully responsible for all acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them. The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work and required compliance by each subcontractor with the applicable provisions of the contract. Nothing contained in the Contract shall create any contractual relation between any subcontractor and the OWNER.

33. **CHANGES IN THE WORK**

The OWNER may make changes in the work scope required to be performed by the CONTRACTOR under the Contract without relieving or releasing the CONTRACTOR from any of his obligations under the Contract or any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of any bonds, and without relieving or releasing the surety or sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is expressly provided otherwise. Additionally, all such change orders must be approved by the OWNER, ENGINEER, CONTRACTOR and FUNDING AGENCY (if applicable). A request for a change order shall include a detailed description of the work change, written pricing from CONTRACTOR for additional bid items not included in the original Contract Documents, changes in contract completion times or dates, statement regarding justification for change, statement that all work in the change shall be performed in accordance with the Contract Documents, and written acknowledgement by all parties.

Except for the purpose of affording protection against any emergency endangering health, lift, limb or property, the CONTRACTOR shall make no changes in the materials used or in the specified construction manner and/or installing the improvements or supply additional labor, service, or materials beyond that actually required for contract execution, unless in pursuance of a written order from the OWNER authorizing the CONTRACTOR to proceed with the change. No claim for Contract Price adjustment will be valid unless so ordered.

For applicable unit prices in the Contract Documents, the OWNER may order the CONTRACTOR to proceed with desired unit prices specified, provided that in the case of a unit price contract the net value of all changes does not increase or decrease the total amount of the Contract by twenty-five percent (25%).

34. **ASSIGNMENT OR NOVATION**

The CONTRACTOR shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or Contract responsibilities without the written consent of the OWNER; provided, however, that assignments to banks or other financial institutions may be made without OWNER consent. No assignment or novation expressly of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the CONTRACTOR'S rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and material, tools and equipment supplied for the work performance under this Contract in favor of all
persons, firms, or corporations rendering such labor or services or supply such materials, tools, or equipment.

35. **REQUESTS FOR SUPPLEMENTARY INFORMATION**

It is the CONTRACTOR'S responsibility to make timely requests to the OWNER for any additional information not already in his possession which should be furnished by the OWNER under the Contract terms, and which he will require in the planning & work execution. Such requests may be submitted from time to time as the need dictates, but each shall be submitted in writing in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and list the various items and the latest date by which each will be required by the CONTRACTOR. The first list shall be submitted within two (2) weeks after Contract award and shall be as complete as possible at that time. The CONTRACTOR shall, if requested, furnish promptly any assistance and information the ENGINEER or OWNER may require in responding to these requires of the CONTRACTOR. The CONTRACTOR shall be fully responsible for any work delays or to other arising from his failure to fully comply with the provisions of this section.

36. **PERMITS AND CODES**

The CONTRACTOR shall give all notices required by and comply with all current applicable laws, ordinances, and codes of the applicable Local, State & Federal Governments. Before installing any work, the CONTRACTOR shall examine the drawings and technical specifications for compliance with these applicable ordinances & codes and shall immediately report any discrepancy to the OWNER. The CONTRACTOR shall at his own expense, secure & pay for all required permits required or any of associated agencies. If the local regulatory body or agency agrees to waive any fees, CONTRACTOR shall be responsible for obtaining written documentation of this waiver and shall still be responsible for implementing all associated work with the Contract Documents in accordance with the applicable laws, ordinances & codes.

The CONTRACTOR shall comply with all current applicable laws, ordinances & codes governing the disposal of surplus excavation, materials, debris and rubbish on or off the Project Area and commit no trespass on any public or private property in any operation due to or connected with the Contract Improvements. CONTRACTOR shall provide written manifests to the OWNER regarding proper disposal of said materials.

The CONTRACTOR shall make arrangements for and pay the water, electrical power, sewer, or other utilities required during construction unless they have received written documentation that the OWNER or applicable utility provider has waived such fees.

37. **DUST CONTROL**

During project construction, the CONTRACTOR shall use every means possible to control the amount of dust created by construction. Prior to the close of each day's work, the CONTRACTOR, if directed by the OWNER, shall moisten the bank and surrounding areas to prevent a dusty condition.
38. **SANITARY FACILITIES**

The CONTRACTOR shall furnish, install & maintain ample sanitary facilities for the workmen. Based upon the number of workers, a sufficient number of enclosed temporary toilets shall be conveniently placed as required. Drinking water shall be provided from an approved regulated source, so piped or transported as to keep it safe & fresh and serviced from single service containers, satisfactory types of sanitary drinking stands, or fountains. All such facilities and services shall be furnished in strict accordance with current existing & governing health regulations.

39. **USE OF PREMISES**

The CONTRACTOR shall confine his construction equipment, materials, and operations to the contract limits as shown on the drawings and as prescribed by the pertaining ordinances or permits, or as may be desired by the OWNER, and shall not unreasonably encumber the site or public rights of way with his materials and construction equipment.

40. **INSPECTION**

All materials and workmanship shall be subject to inspection, examination and/or testing by the OWNER and ENGINEER at any and all times during manufacture or construction and at any and all places where such manufacture or construction occurs. The OWNER shall have the right to reject defective material & workmanship or require its correction. All unacceptable workmanship shall be satisfactorily corrected. Rejected materials shall be promptly removed for the project area(s) and replaced with materials of specified quality without charge. If the CONTRACTOR fails to proceed at once with the correction of rejected workmanship or defective materials, the OWNER may contract or otherwise have the defects remedied or rejected materials removed from the project area(s) and charge the cost of the same against any monies which may be due the CONTRACTOR, without prejudice to any other rights or remedies of the OWNER.

The CONTRACTOR shall promptly furnish all materials reasonably necessary for any tests which may be required. All OWNER testing shall be performed in such manner as not to delay the work unnecessarily and will be made in accordance with the provisions of the technical specifications.

The CONTRACTOR shall notify the OWNER and ENGINEER sufficiently in advance of back filling or concealing any facilities to permit proper inspection. If any facilities are concealed without approval or consent of the OWNER, the CONTRACTOR shall uncover said work for inspection and recover such facilities at his own expense, when so requested by the OWNER. Should it be considered necessary by the OWNER at any time before final acceptance of the entire work to make an examination of work already completed by uncovering the same, the CONTRACTOR shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any important or essential respect, due to the fault of the CONTRACTOR or his subcontractors, the CONTRACTOR shall defray all the expenses of such examination and satisfactory reconstruction. If, however, the work is found to meet the Contract specifications, the actual cost of labor and material involved in the examination and replacement, shall be
allowed the CONTRACTOR and he shall, in addition, if work completion of the entire Contract has been delayed thereby, be granted a suitable time extension on account of the additional work involved.

Neither inspection, testing, approval, nor acceptance of the work in whole or in part, by the OWNER or its agents shall relieve the CONTRACTOR or his sureties of full responsibility for materials furnished or work performed not in strict accordance with the Contract Documents.

When the Contract improvements are substantially completed, the CONTRACTOR shall notify the OWNER in writing that the work will be ready for final inspection on a definitive date which shall be stated in the notice. The OWNER will make the arrangements necessary to have the final inspection commence on the date stated in the notice, or as soon thereafter as is practicable. Final approval for the Project shall be completed until acceptance by the OWNER, ENGINEER, CONTRACTOR, and FUNDING AGENCY (if applicable). Final approval will not be given until the CONTRACTOR has provided the OWNER with a Notarized Affidavit of All Bills Paid/Release of Lien and the Certificate of Construction Completion signed by the OWNER, ENGINEER, CONTRACTOR, and FUNDING AGENCY (if applicable).

41. REVIEW BY OWNER

The OWNER and its authorized representation and agents shall have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data & records pertaining to this Contract. However, all instructions and approval with respect to the work will be given to the CONTRACTOR only by the OWNER through its authorized representatives or agents.

42. DEDUCTION FOR UNCORRECTED WORK

If the OWNER deems it not expedient to require the CONTRACTOR to correct work not done in accordance with the Contract Documents, an equitable deduction from the Contract Price will be made by agreement between the CONTRACTOR and the OWNER and subject to settlement.

43. COMPLIANCE WITH AIR AND WATER ACTS

In compliance with the Clean Air Act, as amended, 41 USC Sec. 7401 et. Seq., and the regulations of the EPA with respect thereto, the CONTRACTOR agrees that:

Any facility to be utilized in the performance of this contract or any subcontract shall not be a facility listed on the EPA List of Violating Facilities pursuant to 40 CFR 15.20. He will comply with all requirements of Section 114 of the Clean Air Act, as amended. Materials utilized in the Project shall be free of any hazardous materials, except as may be specifically provided for in the specifications.
If the CONTRACTOR encounters existing material on sites owned or controlled by the OWNER or in material sources that are suspected by visual observation or smell to contain hazardous materials, the CONTRACTOR shall immediately notify the ENGINEER and OWNER. The OWNER will be responsible for testing for and removal or disposition of hazardous materials on sites owned or controlled by the OWNER. The OWNER may suspend the work, wholly or in part during the testing, removal or disposition of hazardous materials on sites owned or controlled by the OWNER.

The CONTRACTOR shall furnish all materials and equipment that is free of asbestos materials. In addition, the CONTRACTOR will submit with final pay request a notarized affidavit that no asbestos has been used on the site or project.

44. JOB OFFICES

The CONTRACTOR and his subcontractors may maintain such office and storage facilities on the site as are necessary for proper execution of the work. These shall be located so as to cause no interference to any work to be performed on the site. The OWNER shall be consulted with regard to locations. Upon Project completion or as such times directed by the OWNER, the CONTRACTORS shall remove all such temporary structures and facilities from the site, and leave the site of the work in the condition required by the Contract.

45. PARTIAL USE OF SITE IMPROVEMENTS

The OWNER may give notice to the CONTRACTOR and place in use those sections of the improvements which have been completed, inspected and can be accepted as complying with technical specifications and if in its opinion, each such section is reasonably safe, fit and convenient for the use & accommodation for which it was intended, provided:

- The use of such sections of the improvements shall in no way impede project completion;
- The CONTRACTOR shall not be responsible for any damages or maintenance costs due directly to the use of such sections;
- The period of guarantee shall not begin to run until the date of final acceptance of all work which the CONTRACTOR is required to construct under this Contract.

03/2022
SAMPLE INSURANCE CERTIFICATE
**ACORD**

**CERTIFICATE OF LIABILITY INSURANCE**

**This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not affirmatively or negatively amend, extend or alter the coverage afforded by the policies below. This certificate of insurance does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder.**

**Important:** If the certificate holder is an additional insured, the policy(ies) must be endorsed, if subrogation is waived, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

**Producer**

Agency Name: 123 Sample Street
Anywhere, TX 78700
Phone Number:

**Insured**

Sub-Contractor
Address
City, State, Zip

**Certificate Number:**

**Coverages**

This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies. Limits shown may have been reduced by prior claims.

<table>
<thead>
<tr>
<th>Type of Insurance</th>
<th>Additional Information</th>
<th>Policy Number</th>
<th>Policy Eff. Date</th>
<th>Policy Exp. Date</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>GENERAL LIABILITY</td>
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<td>B</td>
<td>UMRELLA LIABILITY</td>
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<tr>
<td>C</td>
<td>WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Description of Operations/Locations/Vehicles**

As per policy provision, Certificate Holder and Owner are listed as additional insured in regard to the auto and general liability policies as provided by additional insured endorsement. A waiver of subrogation endorsement is provided to the Certificate Holder and Owner in regard to the auto, general liability and workers compensation policies as per policy provision. General liability, auto and workers compensation policies include(s) a 30 Days Notice of Cancellation endorsement providing 30 days advance notice if policy (See Attached Descriptions)

**Certificate Holder**

Sample Certificate for Sub-Contractor

**Cancellation**

Should any of the above described policies be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

**Authorized Representative**

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Is canceled by the company other than for nonpayment of premium, or direct cancellation by named insured as per policy provision.
TECHNICAL SPECIFICATIONS
Technical Specification No. 2

Force Main

SCOPE

The purpose of this technical specification is to explain in detail all aspects involved with installation of stormwater force main. The subjects to be covered are clearing, excavation, backfilling, materials to be used, concrete, and final cleanup.

PROTECTION OF EXISTING UTILITIES

It shall be the responsibility of the CONTRACTOR to verify the existence and location of all underground utilities along the route of work. The omission from or the inclusion of utility locations on the plans is not to be considered as the nonexistence of, or a definite location of existing underground utilities.

All excavation shall be unclassified and will not be measured or paid for as a separate bid item. The cost of excavation shall be included in the contract price for the related items of the Bid Proposal.

The CONTRACTOR will take the necessary precautions to protect existing utilities from damage due to his operations. Any damage to the utilities will be repaired at the CONTRACTOR’S expense.

A sufficient distance back from the edge of the excavation shall be maintained to avoid overloading and to prevent slides or caving. The excavated material shall be kept trimmed in such a manner as to be of as little inconvenience as possible to the public and adjoining property owners. At street crossings, sidewalks, and other points where the ENGINEER deems necessary the trenches shall be bridged in a secure manner so as to prevent serious interruption of travel and to provide access to fire hydrants, and public and private premises. Such bridging shall be approved by the ENGINEER.

BENCH MARKS, STAKES, AND MONUMENTS

The CONTRACTOR shall not disturb any bench marks or property line monuments. In the event it becomes necessary to remove any bench mark or property line monument in the performance of the work, the CONTRACTOR shall notify the ENGINEER prior to removal so that such points may be referenced, in preparation of replacement. The Contractor shall replace monuments as needed.

All construction staking and layout shall be the responsibility of the CONTRACTOR. The ENGINEER has provided vertical benchmarks on the plans. CONTRACTOR shall verify all figures and elevations before proceeding with the work and will be responsible for any error resulting from his failure to do so.
CLEARING

All trees and vegetation, except such trees and vegetation that are to remain in place as designated by the ENGINEER, shall be removed from the site. Trees and other vegetation to be left standing shall be thoroughly protected from damage by the erection of barriers or by such other means as the circumstances require, as approved by the ENGINEER. Clearing operations shall be conducted so as to prevent damage by falling trees to trees left standing, to existing structures and installations and to those under construction, and so as to provide for safety of employees and others.

All roots, stumps, and other debris shall be removed from the site. All depressions resulting from the removal of stumps, roots, and debris shall be filled with suitable materials and compacted to make the surface conform to the surrounding grounds.

All timber, logs, stumps, roots, brush, and other refuse from clearing and grubbing operations shall become property of the CONTRACTOR and shall be removed from the site or shall be disposed of by burning. Timber and other refuse to be disposed of by burning shall be burned at locations specified by the ENGINEER in a manner that will avoid all hazards, such as damage to existing structures, construction in progress, trees, and vegetation. The CONTRACTOR will be responsible for compliance with all Federal, State or local laws and regulations relative to the building of fires.

Disposal by burning shall be kept under constant attendance until the fires have been burned out or have been extinguished. All noncombustible materials cleared from the site shall become the property of the CONTRACTOR and shall be disposed of by hauling from the site.

EXCAVATION

General: Excavation shall include the removal of any trees, stumps, brush, debris, or other obstacles that may obstruct the line of work, and the excavation and removal of all earth, rock or other materials to the extent necessary to install the pipe and appurtenances in conformance with the line and grades shown in the plans, or as specified.

Maximum and Minimum Width of Trenches: The sides of all trenches shall be cut as nearly vertical as possible. Unless otherwise specified on the plans, the minimum width of trench in which the pipe may be installed shall not be less than twelve (12) inches plus the outside diameter of the pipe, and the maximum width shall not be more than twenty (20) inches plus the outside diameter of the pipe, measured at an elevation in the trench which is twelve (12) inches above the top of the pipe when it is laid to grade.

Whenever the prescribed maximum trench width is exceeded, except as such excess may be necessary for compliance with the plans or specifications, the pipe shall be cradled with Class 200 concrete as directed by the ENGINEER, and at the expense of the CONTRACTOR.
Sheeting, Shoring, and Bracing: The sides of all excavation shall be sufficiently sheeted, shored, and braced so as to prevent slides, cave-ins, settlement or movement of the banks, and to maintain the excavation clear of obstructions that will in any way hinder or delay the progress of the work. In wet, saturated or flowing materials, where it is necessary to install tight sheeting or cofferdams, wood or steel sheet piling of a design and type approved by the ENGINEER shall be used. All sheeting, shoring, and type approved by the ENGINEER shall be used. All sheeting, shoring and bracing shall have sufficient strength and rigidity to withstand the pressure exerted and maintain the sides of the excavation properly in place and protect all persons or property from injury or damage. When excavations are made adjacent to existing buildings or other structures, or in paved streets, particular care shall be taken to adequately sheet, shore and brace the sides of the excavation to prevent undermining of, or settlement beneath the structures or pavement. Underpinning of adjacent structures or pavement shall be done by the CONTRACTOR at his own cost and expense, and in a manner satisfactory to the ENGINEER, or, when required by the ENGINEER, the pavement shall be removed, the void satisfactorily refilled, compacted, and the pavement replaced by the CONTRACTOR; the entire expense of such removal and subsequent replacement thereof shall be borne by the CONTRACTOR. Sheetin, shoring, and bracing shall be done in such a manner as not to endanger or damage either new or existing structures, private or public properties, and so as to avoid cave-ins, or sliding of the banks. All holes or voids left by the removal of the sheeting, shoring, or bracing shall be immediately and completely filled and compacted with suitable materials. If for any reason, the CONTRACTOR, with the approval of the ENGINEER, elects to leave in place the sheeting, shoring or bracing, no payment will be allowed for such material left in place.

Dewatering Excavations: The CONTRACTOR shall immediately remove all surface or seepage water from sewers, drains, ditches, and other sources which may accumulate during the excavation and the construction work, by providing the necessary underdrains or otherwise, and by doing the necessary pumping, bailing or draining. The CONTRACTOR shall have available at all times sufficient equipment in proper working order for doing the work herein required. All water removed from excavations shall be disposed of in an approved manner, so as not to create unsanitary conditions, nor to cause injury or damage to persons or property, or damage to the work in progress, nor to interfere unduly with the use of streets, private driveways or entrances. Pumping, bailing and draining, underdrains, ditches, etc., shall be considered as incidental work and will not be paid for as separate items, but their cost shall be included in such contract prices as are provided in the contract.

Subgrade in Earth: Where a firm and stable foundation for the pipe can be obtained in the natural soil and where special embedment is not shown on the plans or specified herein, the bottom of the trench shall be carefully and accurately trimmed to fit the lower portion of the pipe barrel. Bell holes shall be excavated for each joint. The bell holes shall be accurately located and shall be of sufficient width and depth to allow ample room for making the joint to relieve the pipe bell of all load.
Should the excavation be carried below grade, except as herein specifically provided, the CONTRACTOR shall, at his own expense, refill it to the proper elevation with sand or gravel, as directed by the ENGINEER, which shall be compacted by tamping until it is firm and unyielding.

**Subgrade in Rock:** If the bottom of the excavation for the sewer line is found to be in rock or other hard material that cannot be excavated to a true subgrade and shaped to provide uniform bearing for the pipe barrel, the rock or other material shall be removed to a depth not less than three (3) inches below subgrade and the bottom of the trench brought to true subgrade elevations by filling with pea gravel or suitable rock cuttings and shavings from the excavation and compacting by means of tamping until a uniformly unyielding foundation is obtained, as specified by the ENGINEER.

**Soft Subgrade:** Where soft or spongy material is encountered in the excavation at subgrade level, it shall be removed only upon the direction of the ENGINEER, to such a depth that by replacing the unsuitable material with tamped gravel a firm and stable foundation can be secured. Suitable gravel bedding will be paid for at the contract unit price per cubic yard as provided in the Bid Proposal.

**Disposal of Excavated Material:** Suitable excavated materials will be piled adjacent to the work to be used for backfilling. Excavated materials unsuitable for the backfilling, or in excess of that required for backfilling, shall be disposed of by the CONTRACTOR at locations designated on the plans or approved by the ENGINEER. Desirable top soil, sod, etc., shall be carefully piled separately in its original position when required. Excavated materials shall be handled at all times in such a manner as to cause a minimum inconvenience to public travel and to permit safe and convenient access to private and public property adjacent to or along the line of the work. In parkways and easements where it is necessary to deposit excavated materials on lawns during the work, burlap, or similar materials shall be placed on the lawn to prevent contact between excavated materials and the lawn.

**Private Road Crossings:** Where the sewer line crosses private or farm roads, the CONTRACTOR shall so conduct his work as to cause the least inconvenience to the property owner involved, and, upon completion of backfilling, shall restore the road to a condition as good as, or better than, that in which it was originally, as determined by the ENGINEER.

**Street, Roadway, Railroad, and River Crossing Excavation:** Where the sewer line crosses a street, roadway, driveway, highway, river or railroad the method of excavation shall meet the requirements set forth as shown on the plans.

A. **Open Cut** - Where open cuts are allowed through roadways the sides of the trench shall be kept as nearly vertical as possible and, where necessary, shall be sheeted and braced to prevent caving. The trenches shall be backfilled as shown on the plans. Pavement or surface replacement will be of the same type and quality as the original surface as shown on the plans or as specified below.
Paved roadways will not be open cut, unless specifically noted on the plans. In all cases when open cuts are allowed through pavements, the methods of construction must meet the requirements of the appropriate agency in all respects, including deviations from these requirements and plans.

B. **Boring, Jacking, or Drilling** - Where indicated on the plans and/or as directed, the pipe will be drilled, pushed or jacked under roadways or rivers; or the pipe will be installed in casing that has been placed under the roadway by boring, jacking or drilling.

The uncased carrier pipe or, when required, the encasement pipe, shall be installed by boring and jacking, or by open cut method as indicated on the plans. Regardless of the method used, the pipe shall be installed with even bearing throughout its length, and all voids between the pipe and earth or rock shall be filled with stabilized pea gravel, grout or other approved material per manufacturers requirements. All horizontal drilling of HDPE shall meet manufacturers recommendations.

The minimum length of carrier and/or encasement pipe shall be determined as indicated on the plans. Encasement pipe shall be tightly jointed to prevent leakage. The ends of the encasement pipe shall be plugged with a clay core to prevent entrance of excessive groundwater.

No trench excavation shall be carried closer than ten (10) feet of all pavement edges and no closer than fifteen (15) feet for TxDOT pavement edges. No dirt from trench excavation shall be piled on roadway shoulders. Slopes, ditches, and berms shall be restored to their original condition.

The CONTRACTOR shall notify the City of his construction schedule not less than three (3) days prior to commencing the work within the Right-of-Way.

**Open Trenches:** Any trench left open after working hours shall be protected by the Contractor by whatever means necessary to protect the public. Measures may include but not be limited to: trench cover plates, plywood covers, fenced perimeters, barriers, etc. It is the Contractor’s responsibility to maintain a safe environment during the entire course of the job until fully accepted. Costs of all protection measures shall be included in the price for installing the line (subsidiary).

**BACKFILLING**

Backfilling shall include the refilling and consolidating of the fill in trenches and excavations up to the surrounding ground surface or road grade or crossings.

Backfilling shall be done in accordance with plan notes and details. The method of backfilling pipe trenches shall be as follows:
Install Bedding material around the piping. Selected material shall first be hand placed on both sides of the pipe simultaneously in layers of not more than four (4) inches in loose thickness, and these layers shall be firmly compacted by hand tamping. The layers of backfill shall be sprinkled lightly with water if additional moisture is required for proper compaction. This process of filling and tamping in layers shall be continued until the backfill is brought up to the level of the pipe spring line. The remainder of the trench or excavation may be backfilled by means of any approved method.

Excavated material which is unsuitable for backfilling, and excess material shall be disposed of in a manner approved by the ENGINEER. Except in cultivated fields, surplus spoil may be neatly distributed and spread on the Right-of-Way which shall be left in a clean and sightly condition.

**PIPE**

A. **Material Verification:** Each length of pipe must show the diameter and the commercial standard which is applicable to the type of pipe specified. The pipe manufacturer shall furnish a certification with the electronic submittals that the pipe is in full compliance with these specifications and in full compliance with the commercial standards applicable to the pipe furnished. Properties should include normal bursting pressure, manufacturer’s maximum working pressure, physical dimensions, and tolerances.

B. **Polyvinyl Chloride (PVC):** Plastic pipe for force mains shall be polyvinyl chloride, Type 1, Grade 1, (Norman Impact), conforming to ASTM D2241, and having a working pressure SDR-21 200 psi as specified at 73.4 degrees F. based on a working fiber stress of 2000 psi. Class 900 pipe shall meet AWWA C900-16 Standard Specification for Polyvinyl Chloride pressure pipe for working pressures of 150 or 200 psi as specified by Engineer. Pipe shall be of domestic origin only. The Contractor shall submit to the Engineer for approval a complete set of Specifications and manufacturer's installation recommendations prior to shipment of these materials. The pipe manufacturer shall submit six (6) copies of a certification that the pipe is in full compliance with these specifications and commercial standards applicable to the pipe furnished. Properties should include normal bursting pressure, manufacturer’s maximum working pressure, physical dimensions, and tolerances. Pipe delivered to the job site shall not be more than three (3) months old. Any pipe older than three (3) months shall be rejected.

**CONTRACTOR** shall be required to keep a log of all truck loads, including manufacturing dates and lot numbers. The pipe shall be transported to the job site by acceptable transportation methods and the front end of the pipes shall be covered with a tarp to prevent foreign materials from entering pipes. Each load of pipe and other materials delivered to the job-site will be inspected, before unloading, by the OWNER, INSPECTOR or ENGINEER to assure that it meets
specifications. The ENGINEER or OWNER shall have the right to reject any load of pipe that he feels does not meet the specifications during unloading and anytime prior to installation. It will be the CONTRACTOR’S and pipe manufacturer’s responsibility to determine if any laboratory testing is warranted. The cost of any such testing will be borne by the CONTRACTOR. Any pipe with bell or gasket damage shall be immediately rejected and replaced at no additional cost to the OWNER.

INSTALLATION

A. **HDPE**: Install per manufacturers recommendations. Polyethylene pipe shall be made from polyethylene resin compound with a minimum cell classification of PE 345434C for PE 3408 materials in accordance with ASTM D3350. Materials shall have a Long Term Hydrostatic Strength of 1600 psi when tested and analyzed by ASTM D2837, and shall be a Plastic Pipe Institute (PPI) listed compound. The raw material shall contain a minimum of 2%, well-dispersed, carbon black. The pipe shall contain no recycled compound except that generated in the manufacturer’s own plant from resin of the same specification. Compliance shall be verified with a statement from the pipe supplier enclosed as part of the submittal. The Manufacturer’s Quality System shall be certified by an appropriate independent body to meet the requirements of the ISO 9002 Quality Management Program.

The pipe shall be designed in accordance with the relationships of the ISO-modified formula:

\[
P = \frac{2 S}{[(D_0/t) - 1]}
\]

where:
- \( S \) = Hydrostatic Design Stress, psi
- \( P \) = Design Pressure Rating, psi
- \( D_0 \) = \( \text{O}_{\text{avg}} \) for IPS pipe
- \( D_{\text{min}} \) for ISO pipe
- \( t \) = Minimum Wall Thickness
- \( D_0/t \) = Dimension Ratio

The design pressure rating \( P \) shall be derived using the ISO modified formula above and shall be its normal working pressure in pounds per square inch at temperatures up to 73° F. The Hydrostatic Design Stress shall be 800 psi for PE 408 materials. The pipe dimensions shall be as specified in manufacturer’s literature.

The pipe shall be marked at intervals not to exceed five (5) feet and should include the name/trademark of the pipe manufacturer, nominal pipe size, dimension ratio, the letters PE followed by the polyethylene grade per ASTM D3350 followed by the Hydrostatic Design Basis in 100’s of psi, Manufacturing Standard Preference, and production code from which the date and place of manufacture can be determined. ENGINEER to specify SDR rating on drawings as needed.
Joining: Polyethylene pipe should be joined wherever possible by the method of thermal butt fusion, as described in ASTM D2657, Heat Joining Polyolefin Pipe and Fittings, and as recommended by the manufacturer. The temperature of the heater plate should not exceed 425°F +/- 25°F. The joining interface pressure should not exceed 25 psi of projected end area for European design fusion machines or 75 psi of projected end area for American design fusion machines. The polyethylene pipe may be adapted to fittings or other systems by means of an assembly consisting of a polyethylene stubend, butt fused to the pipe, a back-up flange of ductile iron, made to Class 150, ANSI B13.1/B16.5 dimensional standards with exceptions, bolts of compatible material and a gasket of suitable neoprene, red rubber or asbestos-rubber compound cut to fit the joint. In all cases, the bolts shall be drawn up evenly and in line. Polyethylene pipes of the same outside diameter but different wall thickness shall be joined by means of a flange assembly as designated above. Only those adequately trained and qualified in the techniques involved shall perform fusion joining. CONTRACTOR shall provide in writing, as part of the submittal, that their personnel are qualified to join HDPE piping [minimum five (5) years experience].

B. PVC: The following installation practices shall be used in conjunction with the manufacturer's recommendation:

1. **Storage:** Store pipe away from sunlight and heat. Store all pipe on a flat surface. Do not stack bundles. Pipe left for prolonged periods should be covered with tarp.

2. **Salvage of Damaged Pipe:** Pipe with deep scratches or gouges (penetration of more than 10 percent of wall thickness) running full length of pipe shall be rejected. Localized damage may be cut out and balance of length used.

3. **Cutting:** Use a medium tooth saw and miter box. Fine emery cloth or sandpaper may be used to remove burrs. Tubing cutters, wheel-type cutters, and snap-type cutters are not recommended.

4. **Joining:**
   a. **Solvent Weld Method:**
      i) Clean and dry pipe and fitting socket.
      ii) Make "dry run" by inserting pipe into socket to check for proper fit. Interference should take place between and of socket depth. Reject all fittings not meeting this requirement. Solvent cement should be furnished in a sealed container.
iii) Paint on a coat of solvent cement on the pipe end. The length covered should equal the fitting socket depth less 1 inch. Use a flat brush with natural hair bristles.

iv) Paint a thin coat of solvent cement to fitting socket surface.

v) Reapply second coat to pipe end.

vi) Insert pipe end with twisting motion into fitting socket turning (or rotating) an approximate ¼ turn to spread the cement. Be sure pipe bottoms in socket.

vii) Hold pipe and fitting together firmly fifteen (15) seconds.

viii) Wipe off excess cement that appears on pipe surface immediately after making up joint.

ix) Allow joint to set before handling.

   ABS.............. 2 to 5 minutes
   PVC.............. 5 to 10 minutes

The longer times apply during periods of cold weather or high humidity.

x) Pipe may be pressure tested after joints have fully “set.” The following times are recommended:

   ABS.............. 24 Hours
   PVC.............. 48 Hours

xi) Line pressure up to fifty (50) psi may be applied in the following times:

   ABS.............. 4 Hours
   PVC.............. 8 Hours

b. **Threaded Connections:** PLASTIC PIPE IS NOT TO BE THREADED - Female threaded adapters only should be used for making up threaded joints.

c. **Making Tie-In or Branch Connections:**

i) **New Construction:** Plastic to Plastic: Insert socket style tee in line. Use suitable reducer tee (or straight tee with reducer bushings) if branch line is of smaller diameter than main line.

ii) **Existing Construction:** Plastic to Plastic: Cut into line. Fold in socket style tee. This may require flexing pipe back one or two joints from point of
5. **Laying Plastic Pipe:**

   a. **Stringing and Ditching**

      i) Place along ditch line opposite from where backfill is piled. Piping shall not be "kicked or thrown off" trailers when laying out along route. In TxDOT or County Road R-O-Ws, piping shall be neatly placed as far away from traveling public as practical.

      ii) If pipe is joined on top of ground, be sure to keep pressure on piping when lowering into trench to prevent pipe from pulling apart.

      iii) Minimum ditch widths will be three (3) times the diameter of the pipe, with a six (6) inch absolute minimum.

      iv) Pipe should be laid on a smooth trench bottom. It need not be laid to grade.

   b. **Supporting and Backfilling:**

      i) Support pipe uniformly and continuously. All rock and sharp objects must be removed from trench bottom. In rock excavation, spread a layer of select sand backfill material around pipe and on trench bottom upon which pipe will rest as shown on Detail Sheet in Plans. Native material backfill, free of stumps, rocks, and lumpy clay shall be used to backfill remainder of trench.

      ii) Place suitable 6" sand bedding backfill material around pipe and tamp well to secure proper compaction.

      iii) Leave all joints well exposed.

      iv) Fill line with water and examine joints for leaks.

      v) Joints may now be covered by hand backfilling.

      vi) Complete backfilling using machine methods, if desired. Frozen lumps, rocks & lumpy clay over four (4) inches in diameter, and organic material (stumps, etc.) shall not be used.
IMPORTANT NOTICE ON PLASTIC PIPE CONTRACTION

All plastic pipe expands and contracts at a rate substantially greater than asbestos-cement or metal pipe. Therefore, special precautions must be taken to minimize the build up of stresses due to thermal contraction. Small diameter pipes may be "sneaked" in the trench but the most effective methods are as follows:

- Fill pipe with water prior to backfilling.
- Trench may be water flooded.
- Backfill lines first thing in the morning while pipe and soil are approximately the same temperature.

C. C.I. and A.C.: Cast iron (C.I.) and asbestos-cement (A.C.) pipe shall be installed in accordance with manufacturer's specifications and good construction practice.

FITTINGS

Fittings shall be for use with raw sewer applications.

A. PVC: Compact ductile iron fittings with mechanical joints shall be used in all tie-ins and branch connections. In addition to standard concrete thrust blocking, all such joints to have mega-lug joint restraints, or equal. PVC plastic fittings for piping less than 1-1/2" diameter shall be of the same class as the pipe in which they are to be installed.

B. C.I.: Flanged cast iron fittings shall conform to the American Standards Association Specification B16.1 for Class 125 fittings.

Bell and spigot fittings shall be short body fittings having the laying dimensions of A.S.A. A-21.10 fittings and wall fittings and wall thickness as required by the Class designated in the plans.

All fittings, 2" and larger shall be restrained to Piping with Ford Uni-Flange, Megalug or Equal Restraints. Restraints shall provide full circle contact and support of the pipe wall. Grip ring serrations shall be machined in a uniform manner and not cast. Grip ring shall come with features engaging the fitting restraint lugs without the need for separate restraint rods. All components of the restrainer, including the gland, bolts, and restraint segments shall be of high strength ductile iron, ASTM A536, Grade 65-45-12. The saddles shall be listed in the Underwriters Laboratories Listing of Drinking Water System Components in Accordance with ANSI/NSF 60 & 61. All restraint devices shall meet or exceed the requirements of Uni-B-13-94 Recommended Performance Specification for Joint Restraint Devices for Use With Polyvinyl Chloride Pipe. All restraint devices shall have a 250 psi working pressure equivalent to the full rated pressure of the PVC pipe on which they are installed, with a minimum 2:1 safety factor when tested in a dead end situation.
Concrete thrust blocking shall also be used adjacent to these restraint devices to restrain piping upstream and downstream or fittings. Concrete thrust blocking details may be found on the Detail Sheet in the Plans. Concrete shall be 2,000 psi compressive strength in 28 days.

Fittings smaller than 1-1/2” shall not be required to be restrained as these connections are solvent weld.

FORCE MAIN TESTING

**Testing of Installed Pipe.** Pressure test shall be performed per TCEQ 217.68. Contractor shall perform all tests and copies of all test results shall be submitted to the ENGINEER. The CONTRACTOR shall supply all water for these tests, all equipment and labor necessary to convey the water into the force main, and such labor and equipment as may be required in installing test plugs/valves, and other incidental work in conducting the tests and the cost thereof shall be included in the price for constructing the force main.

A. A pressure test must use 50 pounds per square inch above the normal operating pressure of a force main for a minimum of four (4) hours. This project will require a pressure test of a minimum of 100 psi. In no case should the testing pressure exceed 75% of the pressure rating of the pipe, valves, fittings, or any other appurtenances.

B. A temporary valve for pressure testing may be installed near the discharge point of the force main and removed after a test is successfully completed.

C. A pump isolation valve may be used as an opposite termination point.

D. The test must involve filling a force main with water.

E. A pipe must hold the designated test pressure for a minimum of 4.0 hours.

F. The leakage rate must not exceed 10.0 gallons per inch diameter per mile of pipe per day.

\[
L = \frac{SDP^{1/2}}{155,400}
\]

*Where,*

\[
L = \text{Acceptable leakage rate (gallons/hour/1,000 feet of pipe, based on a leakage rate of 10.0 gallons per inch of diameter per mile of pipe per day)}
\]

\[
S = \text{Length of Pipe (feet)}
\]

\[
D = \text{Nominal diameter of Pipe (inches)}
\]

\[
P = \text{Average test pressure (psi)}
\]
ALL PRESSURE TESTING WILL BE PERFORMED BY THE CONTRACTOR UNDER TECHNICAL SUPERVISION OF THE ENGINEER AND VISUAL OBSERVATION OF THE OWNER/INSPECTOR. COSTS ASSOCIATED WITH TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCLUDED IN UNIT PRICE FOR THE FORCE MAIN.

CONTRACTOR shall be responsible for installation of taps, valves, etc. that may be required for testing of lines. Said appurtenances shall be installed in accordance with the plans and specifications and costs associated with such items shall be included in price for line work. Some or all of those additional items shall be removed, at no additional cost, by the CONTRACTOR if requested by OWNER or ENGINEER.

FINAL CLEANUP

CONTRACTOR shall clean up all job sites daily of all debris. Upon completion of the installation of the water lines, distribution systems, and appurtenances, all debris, including PVC scraps resulting from trenching through abandoned distribution system piping, shall be removed from work areas and disposed of by the CONTRACTOR. In addition, all aboveground structures of abandoned valve clusters shall be removed and disposed of by CONTRACTOR. Reusable meter boxes, valve signs, risers, riser tops and valve lids in locations of abandoned valve clusters shall be given to OWNER. Scraps shall not be buried on private, county, or state properties. This does not relieve the CONTRACTOR of the responsibility of ongoing and routine clean-up operations related to the line laying work. All surplus excavated materials resulting from the work shall be removed from the site or spread on site as directed by ENGINEER / OWNER / STATE. Excess materials shall be mounded along trench lines in order to channel water away from fresh pipe trenches. Excess materials in areas of steep grades shall be utilized to channel water away from trench lines and constructing terracing berms to prevent erosion. When completed, the entire area shall be left in a condition suitable for mowing with standard mowing equipment. ALL disturbed areas in TxDOT R-O-W shall be seeded according to the Seeding Rate Section of this Specifications Book. The costs associated with seeding and final clean-up shall be included in the line item bid prices of the CONTRACTOR. Retainage will not be released until the final cleanup is completed and accepted by the OWNER & ENGINEER.

03/2022
Technical Specification No. 7

Concrete

GENERAL

All concrete to be used will be 4,000-psi strength in twenty-eight (28) days.

MATERIALS

Materials shall conform to the following specifications or standards:

A. **Cement**: ASTM C-150; Portland Cement, Type I, as indicated on the plans.

B. **Aggregates**: Coarse Aggregate - AASHTO M 80-70
   Fine Aggregate - AASHTO M 6-65

1. **Coarse Aggregate**: Coarse aggregate shall consist of crushed stone, gravel, crushed gravel or a combination of these. Gravel and crushed gravel shall consist of clean, hard, durable particles, free from adherent coating, thin or elongated pieces, soft or disintegrated particles, dirt, organic or injurious matter. Crushed stone shall consist of the clean, dustless product resulting from crushing stone. There shall be no adherent coatings, clay, loam, organic or injurious matter.

   Coarse aggregate shall have a wear of not more than forty-five (45) percent when tested according to AASHTO designation T-96 and when tested by standard laboratory methods shall meet the following grading requirements:

<table>
<thead>
<tr>
<th>Sieve Designation</th>
<th>Percent Retained on Sieve</th>
</tr>
</thead>
<tbody>
<tr>
<td>1¾&quot; sieve</td>
<td>0%</td>
</tr>
<tr>
<td>1½&quot; sieve</td>
<td>0% - 5%</td>
</tr>
<tr>
<td>¾&quot; sieve</td>
<td>30% - 60%</td>
</tr>
<tr>
<td>½&quot; sieve</td>
<td>70% - 90%</td>
</tr>
<tr>
<td>No. 4 sieve</td>
<td>95% - 100%</td>
</tr>
</tbody>
</table>

BEFCO ENGINEERING, INC.
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Nominal maximum size of coarse aggregate shall not be larger than:

- 1/5 the narrowest dimension between side of forms, nor
- 1/3 the depth of slabs, not
- 3/4 the minimum clear spacing between individual reinforcing bars.

2. **Fine Aggregate**: Fine aggregate shall consist of sand or mixture of sands with or without a mineral filler. The sand mixture or mixture of sands in fine aggregate shall consist of clean, hard, durable, uncoated grains and shall be free from injurious material and shall not contain more than 0.5 percent by weight of clay lumps.

The fine aggregate, including mineral filler, if used shall meet the following grading requirements:

<table>
<thead>
<tr>
<th>Sieve Designation</th>
<th>Percent Retained on Sieve</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot; sieve</td>
<td>0%</td>
</tr>
<tr>
<td>No. 4 sieve</td>
<td>0% - 5%</td>
</tr>
<tr>
<td>No. 16 sieve</td>
<td>15% - 30%</td>
</tr>
<tr>
<td>No. 30 sieve</td>
<td>35% - 75%</td>
</tr>
<tr>
<td>No. 50 sieve</td>
<td>70% - 90%</td>
</tr>
<tr>
<td>No. 100 sieve</td>
<td>90% - 100%</td>
</tr>
<tr>
<td>No. 200 sieve</td>
<td>97% - 100%</td>
</tr>
</tbody>
</table>

C. **Water**: Questionable water shall be tested in accordance with AASHTO Method T-26.

D. **Admixtures**: Admixtures as recommended by manufacturer shall not be used without written permission of the ENGINEER.

E. **Steel Reinforcement**: All bars shall be new, Grade 60 billet-steel bars which conform the ASTM A-615, latest edition, except that all bars shall be surface deformed bars of intermediate grade steel, as manufactured by the open hearth process. Surface deformation of bars shall conform to ASTM A-305, latest edition.

Wire mesh reinforcement shall be welded steel wire fabric, conforming to ASTM A-185, latest edition. (See Section on Steel Reinforcement)
F. **Expansion Joint Material:** Expansion joint material shall be preformed expansion joint filler of the bituminous type that conforms to the requirements of ASTM D-994, latest edition. Dimensions shall be as shown on the drawings (if thickness is not indicated, furnish ½ inch material).

G. **Joint Sealing Compound:** Joint sealing compound shall be the hot-poured elastic type, which conforms to the requirements of ASTM D-1190, latest edition.

H. **Waterstops:** Waterstops shall be Greenstreak Dumbell Type 748 Waterstop, polyvinylchloride material sealtight Type No. 6 DS, as manufactured by W. R. Meadows, Inc., Type No. 6 wide flange (PVC), as manufactured by Dur-O-Wal; or Type CB 1/8, as manufactured by Williams Products, Inc., or approved equal.

**STRENGTH**

A. **Mix Design:** The concrete mix shall be a uniform and workable mix, designed with the intention of producing a compressive strength of 4,000 psi at twenty-eight (28) days and 3,000 psi seven (7) days unless noted on plans. The concrete mix shall contain not more than six (6)-U. S. gallons of water per sack of cement and shall have not less than five (5.0) sacks per cubic yard. Methods and equipment shall be approved by the ENGINEER.

B. **Tests:**

1. **Initial Mix Design:** Before any concrete is used on the project, the CONTRACTOR must prove by tests or other established methods, that the mixes he proposes to furnish will meet the strength and other requirements of the specifications. He shall also establish the relationship between the seven (7) and twenty-eight (28) day strengths of the concrete for the guidance of the CONTRACTOR and ENGINEER and control of the quality of the concrete during the construction period.

2. **Field Test Cylinders:** The CONTRACTOR shall prepare a minimum of four (4) cylinders for each one-hundred (100) cubic yards of concrete or for each days pour in the main structures, if the quantity poured in a day is less than one-hundred (100) cubic yards. These cylinders shall be made and cured in accordance with ASTM C-31. The CONTRACTOR shall have each set of four (4) test cylinders tested for strength by a commercial testing laboratory; two (2) at the age of seven (7)
days and two (2) at the age of twenty-eight (28) days. If any cylinder tests below the specified strength requirements, the ENGINEER shall have the right to require changes in proportions, require additional curing time, and take other measures outlined by the Joint Committee Report on Standard Specifications for Concrete and Reinforced Concrete entitled "Recommended Practice and Standard Specifications for Concrete and Reinforced Concrete". Tests to be paid for by CONTRACTOR. Any other requirements by OWNER/ENGINEER for failed cylinders shall be performed by CONTRACTOR for NO charge.

3. **Slump Test**: The CONTRACTOR shall perform slump tests on each batch of concrete delivered to the job site. Maximum permissible slump shall be as follows:

<table>
<thead>
<tr>
<th>Types of Construction</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforced foundation walls &amp; footing</td>
<td>4&quot;</td>
</tr>
<tr>
<td>Plain footings, caissons &amp; substructure walls</td>
<td>3&quot;</td>
</tr>
<tr>
<td>Slabs, beams, and reinforced walls</td>
<td>4&quot;</td>
</tr>
<tr>
<td>Building columns</td>
<td>4&quot;</td>
</tr>
</tbody>
</table>

4. **Contractor's Responsibility**: It shall be the responsibility of the CONTRACTOR to produce concrete of the strength, durability, workability and finish specified; furnish representative materials for specimens in quantities required by the Testing Laboratory; take samples of materials for testing; check proportions of mix and immediately notify the ENGINEER if the proportions appear improper in any respect. CONTRACTOR shall comply with testing laboratory findings and the ENGINEER’S decisions. CONTRACTOR shall pay for redesign of mix due to change in source of material.

**FORMS**

A. **General**: Forms shall conform to the shape, lines and dimensions of the members as indicated on the drawings, and shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shape. Forms shall be cleaned of dirt, chips, etc., and thoroughly wetted with water or coated with nonstaining mineral oil immediately before placing of concrete. Temporary openings shall be provided at the base of forms when necessary to facilitate cleaning and inspection of forms immediately before placing concrete. All exposed corners shall
be chamfered ¼ inch, using strips dressed on all faces, except where radii are shown on exposed corners.

B. **Form Lumber:** Form lumber used for exposed surfaces shall be sound, well-seasoned lumber, dressed four (4) sides to a uniform thickness and width, free from warps, twists, loose knots, splits, or other defects. Undressed lumber may be used for unexposed surfaces. Moisture resistant form plywood (Not less than five (5) ply and at least 9/16" in thickness) may be used. Joints in forms shall be horizontal or vertical.

C. **Metal Forms:** Metal or other type forms shall be of an approved type that will produce surfaces equal to those produced by the specified wood forms.

D. **Ties:** Form ties for exposed work shall be threaded rod type, using a threaded rod at least 1½" shorter than the wall thickness, so as to provide a minimum break-back of ¾ inch from the wall face, leaving a small clean hole to be grouted. The use of wire ties without providing break-back will not be permitted where the concrete surface will be exposed to weathering, or at any point where discoloration will be objectionable.

E. **Form Removal:** The removal of supporting forms or shores shall not be started until the concrete members have acquired sufficient strength to support safely their weight and any construction live loads, and in any case, such forms shall not be removed for at least three (3) curing days. Forms for walls, side of beams, etc., may be removed after three (3) curing days. Removal of all forms shall be subject to the approval of the ENGINEER.

**PLACING CONCRETE**

Concrete shall be placed only upon a subgrade or surface approved by the ENGINEER and before placing concrete, all forms shall be cleaned of dirt and construction debris, and water drained. Concrete shall be handled from mixer to transport vehicle to place of final deposit in a continuous manner, as rapidly as practicable, and without segregation or loss of ingredient until the approved unit of operation is completed. Concrete that has attained its initial set or has contained its mixing water for more than forty-five (45) minutes shall not be placed in the work. Placing will not be permitted when, in the opinion of the ENGINEER, the sun, heat, wind, or limitations of facilities furnished by the CONTRACTOR prevent proper finishing and curing of the concrete. Forms or reinforcement shall not be splashed with concrete in advance of pouring. Concrete shall be placed in the forms in uniform layers as nearly as practicable in final position. Immediately after placing, concrete shall be compacted by thoroughly agitating in an approved manner.
Special care shall be taken in placing and spading concrete against the forms and all the joints to prevent the forming of voids and honeycombs. Tapping or other external vibration of forms will not be permitted. Concrete shall not be placed on concrete sufficiently hard to cause formations of seams and planes of weakness within the section. Concrete shall not be allowed to drop freely more than five (5) feet in unexposed work; no more than three (3) feet in exposed work; where greater drops are required, a tremie or other approved means shall be employed. The discharge of the tremies shall be controlled so that the concrete may be effectively compacted into horizontal layers not more than twelve (12) inches thick, and the spacing of the tremies shall be such that cavities do not occur. Concrete to receive other construction shall be screeded to proper level to avoid excessive shimming or grouting.

COMPACTATION

Concrete shall be placed in layers not more than twelve (12) inches deep. Special care shall be taken to thoroughly puddle the concrete in forms and to work it around the steel. The CONTRACTOR shall furnish and maintain mechanical vibrators (of approved type) that shall be used to compact and consolidate concrete in the forms. Vibrators shall not be used to transport concrete inside forms. Use of form vibrators will not be permitted. Internal vibrators shall maintain a speed of not less than 5,000 impulses per minute when submerged in the concrete.

At least one spare vibrator or sufficient parts for repairing vibrators shall be maintained at the site at all times. The vibrator shall not be inserted into lower courses that have begun to set.

FINISH

A. Finish of Formed Surfaces: All work that is defective shall be remedied upon the request of the OWNER, or its representative, whose instructions in such matters shall be strictly complied with. Any surfaces or tie-rod holes shall be patched with mortar of the same consistency as the mortar from which the concrete is made. For example, if a 1:3:6 concrete is used, the mortar shall be 1:3. Such mortar shall be well troweled and then floated to remove trowel marks. All such repairs shall be dense, well bonded and properly cured, and when made on surfaces that remain exposed, shall be finished to blend with surrounding concrete. After all forms are removed and all honeycomb and other defective places properly patched and repaired, all exposed surfaces shall be finished by removing protruding fins, or other such projections. Form marks and chamfered edges on all exposed surfaces shall be smoothed by grinding and surface rubbing.
B. **Slab Finish**: Floor slabs at structures and bottom slabs shall receive monolithic steel trowel finish unless otherwise specified. Slabs to receive trowel finish shall first be screeded and wood-floated to a true even plane with no coarse aggregate visible. Sufficient pressure shall be used on the wood floats to bring moisture to the surface. The concrete shall then be hand-troweled to produce smooth impervious surface free from trowel marks. Replaced concrete slabs and sidewalks shall be finished by tamping the concrete with special tools to force the coarse aggregate away from the surface, screeding and floating to bring the surface to the required finish level, steel-troweling to an even smooth surface, and brooming with a soft fiber-bristle brush in a direction transverse to that of the main traffic.

**CURING**

All concrete placed under this Specification shall be cured by protecting it against loss of moisture, rapid temperature change and from rain, flowing water and mechanical injury for a period of not less than seven (7) days from the beginning of the curing operation except as hereinafter noted:

- Formed surfaces shall be cured by leaving the forms on for not less than seventy-two (72) hours after placing concrete.

- Concrete pavements shall be moist cured for a period not less than seventy-two (72) hours after curing operation begins. Waterproofed paper or membrane curing film shall be kept intact for five (5) days in lieu of seventy-two (72) hours wet curing.

The curing operations shall begin immediately after the finishing operations have been completed and the concrete has hardened sufficiently to prevent marring of surfaces. Curing by proper application of cotton mats or clean granular sand kept wet continuously or by proper application of waterproofed paper or membrane curing compound will be acceptable. The membrane-curing compound shall be any commercial curing compound that will provide no less than eighty-five (85) percent water retention when tested in accordance with ASTM C-156 and which will not permanently discolor the concrete.

The CONTRACTOR shall inform the ENGINEER fully of the methods and procedures proposed for curing the concrete prior to placing the concrete.

**STEEL REINFORCEMENT**

All steel reinforcement shall be open-hearth new billet steel of structural or intermediate grade (Grade 60) and conform to ASTM Designation A-615. Bars shall be deformed and shall have a nominal area and weight per foot as follows:
<table>
<thead>
<tr>
<th>SIZE</th>
<th>NOMINAL AREA SQUARE INCH</th>
<th>WEIGHT PER FOOT POUND</th>
</tr>
</thead>
<tbody>
<tr>
<td># 2</td>
<td>0.05</td>
<td>0.167</td>
</tr>
<tr>
<td># 3</td>
<td>0.11</td>
<td>0.376</td>
</tr>
<tr>
<td># 4</td>
<td>0.20</td>
<td>0.668</td>
</tr>
<tr>
<td># 5</td>
<td>0.31</td>
<td>1.043</td>
</tr>
<tr>
<td># 6</td>
<td>0.44</td>
<td>1.502</td>
</tr>
<tr>
<td># 7</td>
<td>0.60</td>
<td>2.044</td>
</tr>
<tr>
<td># 8</td>
<td>0.79</td>
<td>2.670</td>
</tr>
<tr>
<td># 9</td>
<td>1.00</td>
<td>3.400</td>
</tr>
<tr>
<td>#10</td>
<td>1.27</td>
<td>4.303</td>
</tr>
<tr>
<td>#11</td>
<td>1.56</td>
<td>5.313</td>
</tr>
</tbody>
</table>

Wire for fabric reinforcement shall be cold drawn from rods hot rolled from open hearth billets and shall conform to ASTM Designation A-82. Wire for fabric reinforcement shall be #4 gauge or have a nominal diameter of .2253 inch.

Steel reinforcement shall be stored above ground upon platforms or other supports and shall be protected as far as practicable from mechanical injury and rust. When placed in the work, it shall be free of dirt, scale, dust, paint, oil or other foreign material. Reinforcement shall be bent cold to the shapes indicated on the plans with a minimum internal bend radius of six (6) bar diameters. Stirrups and ties shall be cold bent with a minimum internal bend radius of four (4) bar diameters. Bends shall be true to the shapes indicated and irregularities in bending shall be cause for rejection. Unless otherwise shown on the plans, bends for stirrups or ties shall be made around a pin having a diameter of not less than two (2) times the bar size. Hooks shall be a complete semicircular turn of diameter equal to six (6) times the bar diameter, plus an extension at least four (4) bar diameters at the free end of the bar. Bending shall not be done in the field.

Splicing of bars will not be permitted without the written approval of the ENGINEER. Where splicing is unavoidable, the number of splices shall be kept to a minimum and the length of splice shall not be less than thirty (30) bar diameters. (Use 4,000-psi concrete and steel as specified above or strength as noted on plans). When practicable, splices in adjacent bars shall be staggered. Welded splices are not allowed.

Steel reinforcing shall be placed in the position shown on the plans and held securely in place during the pouring of concrete. All slab reinforcement shall be supported with chairs or masonry briquettes at not more than six (6) feet on center. Vertical stirrups shall always pass around the main tension members and be securely attached thereto.
The following minimum concrete cover shall be provided for reinforcement for cast-in-place concrete construction:

**Concrete cast against and permanently exposed to earth**  3 inches

**Concrete exposed to Earth or weather**
- No. 6 thru No. 18 Bars  2 inches
- No. 5 Bars and Smaller  1.5 inches

**Concrete not exposed to weather or in contact with ground**
- Slabs, Walls & Joists
  - No. 14 & No. 18 Bars  1.5 inches
  - No. 11 Bars and Smaller  0.75 inches
- Beams & Columns
  - Primary Reinforcement, Ties, Stirrups & Spirals  1.5 inches

The minimum clear spacing between parallel bars in a layer shall be the diameter of the bar, but not less than one (1) inch.

The reinforcing steel in all concrete walls shall be spaced its proper distance from the face of the forms by means of approved galvanized metal spacers or approved pre-cast mortar or concrete block. Pre-cast mortar or concrete blocks shall be cast in individual molds, in the form of a frustum of a cone or pyramid, with a suitable tie wire to be used for anchoring the block to the steel. The pre-cast blocks shall be properly cured and aged before use in spacing the steel.

All reinforcing steel shall be securely wired together at all intersections. Before any concrete is poured, the steel shall be cleaned of all mortar and scale.

Where wire mesh is used, the mesh shall overlap each other sufficiently to maintain a uniform strength and shall be securely fastened at the ends and edges. The ENGINEER shall inspect all reinforcing and the placement before any concrete may be deposited in the forms.

**FINAL CLEANUP**

After all concrete work has been completed; the CONTRACTOR will remove all debris, trash, surplus material, forms, and equipment from the job site. All surplus excavated material shall be spread as directed by the ENGINEER.

When completed, the entire area shall be left in a smooth condition, suitable for mowing with standard mowing equipment.

03/17
SPECIAL SPECIFICATION
ITEM 10
HYDRAULIC SEEDING

The work of Hydraulic Seeding shall be governed by the provisions of Texas Department of Transportation Item 164 Seeding For Erosion Control, Item 166 Fertilizer and Item 168 Vegetative Watering) except as noted below.

From March 2 to September 14, seeding shall be with hulled Bermuda at a rate of 3 pounds per 1000 square feet. From September 15 to March 1, seeding shall be a combination of 1 pound per 1000 square feet of unhulled Bermuda and 7 pounds per 1000 square feet of Winter Rye. Seed shall have a purity of 95% with 85% germination.

Fertilizer shall be a pelleted or granular slow release with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of 1.5 pounds per 1000 square feet.

Mulch type shall be hay, straw or mulch applied at a rate of 45 pounds per 1000 square feet, with self-tackifier at a rate of 1.4 pounds per 1000 square feet.

The seeded area shall be irrigated or sprinkled in a manner that will not erode the soil, but will sufficiently soak the soil to a depth of six inches. The irrigation or sprinkling shall occur at a minimum ten-day interval during the first two months. Rainfall occurrences of 1/2 inch or more shall postpone the watering schedule for one week. The City of Bastrop will provide reuse water at WWTP site.

Restoration shall be acceptable when the grass has grown at least 1-1/2 inches high with 95% coverage, provided no bare spots larger than 15 square feet exist.

Measurement for Hydraulic Seeding will be by the acre complete in place.

Payment for the work performed and materials furnished in accordance with this Item and measured as provide under "Measurement" will be paid for at the unit price for "Hydraulic Seeding". This price will be full compensation for furnishing all materials, including water for seed-fertilizer slurry and hydraulic mulching, tacking agents and for performing all operations necessary to complete the work.
Technical Specification No. 49
Trench Excavation Safety Systems

SCOPE

This Item governs trench excavation safety systems to be used in conjunction with the installation of utility lines and underground structures. Trench excavation safety systems shall be employed to protect personnel in an excavation from cave-ins, except when excavations are made entirely in stable rock, or when excavations are less than five (5) feet in depth and examination of the ground by a competent person provides no indications of a potential cave-in.

DESCRIPTION

A. CONTRACTOR shall develop, design, and implement the trench excavation safety system, and shall bear the sole responsibility for the adequacy of the trench excavation safety system and providing "a safe place to work" for the workman.

B. Trench excavation safety protection system shall be as prescribed in the Texas Health and Safety Code Section 756.023 and the current Occupational Safety and Health Standards - Excavations (29 CFR Part 1926, Subpart P). This shall be the minimum governing requirement of the item, and is hereby made a part of this item.

C. There are no special shoring requirements of the OWNER that are over and above the requirements as prescribed in the current Occupational Safety and Health Standards - Excavations (29 CFR Part 1926, Subpart P).

D. CONTRACTOR shall, in addition, comply with all other applicable federal, state and local rules, regulations, and ordinances.

E. CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER, IT'S OFFICERS AND EMPLOYEES, FROM ANY AND ALL DAMAGES, COSTS (INCLUDING, WITHOUT LIMITATION, LEGAL FEES, COURT COSTS, AND THE COST OF INVESTIGATION), JUDGEMENTS OR CLAIMS BY ANYONE FOR INJURY OR DEATH OF PERSONS RESULTING FROM THE COLLAPSE OR FAILURE OF TRENCHES OR EXCAVATIONS CONSTRUCTED UNDER THIS CONTRACT.
F. CONTRACTOR ACKNOWLEDGES AND AGREES THAT THIS INDEMNITY PROVISION PROVIDES INDEMNITY FOR THE OWNER IN THE EVENT THAT THE CONTRACTOR WAS NEGLIGENT EITHER BY ACT OR OMISSION IN PROVIDING FOR TRENCH SAFETY, INCLUDING, BUT NOT LIMITED TO SAFETY PROGRAM AND DESIGN REVIEWS, INSPECTIONS, FAILURES TO ISSUE STOP WORK ORDERS, AND THE HIRING OF ANY ENGINEER OR SUBCONTRACTOR.

G. A copy of the geo-technical information obtained by the OWNER for use on the Project is made available to CONTRACTOR with the Contract Documents, if such information was developed.

H. Conduct daily inspections by CONTRACTOR or CONTRACTOR'S independently retained consultant, of the trench safety systems to ensure that the installed systems and operations meet OSHA 29CFR and other personnel protection regulations and requirements.

I. If evidence of possible cave-ins or slides is apparent, immediately stop work in the trench and move personnel to safe locations until necessary precautions have been taken to safeguard personnel.

J. Maintain a permanent record of daily trenching and/or shoring inspections.

MEASUREMENT

Measurement for trench excavation safety system shall be compensated as a unit price bid item.
Angle Of Repose

One method of ensuring the safety and health of workers in a trench or excavation is to slope the sides of the cut to the "angle of repose," the angle closest to the perpendicular at which the soil will remain at rest. The angle of repose varies with different kinds of soil, and must be determined on each individual project.

Note: Clays, Silts, Loams or Non Homogeneous Soils Require Shoring and Bracing. The presence of Ground water Requires Special Treatment.

<table>
<thead>
<tr>
<th>Solid Rock, Shale or Cemented Sand and Gravels</th>
<th>Compacted Angular Gravels</th>
<th>Recommended Slope for Average Soils</th>
<th>Compacted Sharp Sand</th>
<th>Well Rounded Loose Sand</th>
</tr>
</thead>
<tbody>
<tr>
<td>(90)</td>
<td>1 1/2:1 (62.68)</td>
<td>1:1 (45)</td>
<td>1:1 1/2:1 (33.41)</td>
<td>2:1 1/2:1 (26.34)</td>
</tr>
</tbody>
</table>

These requirements pertain to trench depths greater than 5 feet.

Soils Identified

Soil survey publications for most counties are available. They are especially useful to engineers, builders, contractors and others interested in construction hazards and in identifying soils that have a high shrink-swell potential.

ONE EXAMPLE OF SEVERAL TYPES OF SHEETING

Where To Get Help

For a copy of a soil survey, contact the local office of the U.S. Department of Agriculture's Soil Conservation Service, or write the Texas state office, 101 South Main Street, Temple, TX 76501-7682. For additional information about shoring or sloping, contact OSHA, 1425 W. Pioneer Drive, Suite 230, Irving, TX 75061-7181.
Technical Specification No. 65
Non-Clog Submersible
Sewage Pumps

GENERAL

A. CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to provide non-clog submersible centrifugal sewage pump(s) as specified herein. The pump(s) shall be supplied with motor, close couple volute, cast iron discharge elbow, guide bar brackets, power cables and all associated appurtenances. The pump(s) shall be utilized in a wet pit environment.

B. CONTRACTOR shall also furnish and install a control panel that contains necessary components for proper starting and operation of the pump(s). The control panel shall be supplied by the same manufacturer as the pump.

QUALITY ASSURANCE

A. The pump(s) shall be heavy duty, electric submersible, centrifugal non-clog units designed for handling raw, unscreened stormwater and shall be fully guaranteed for this use. The pump(s) provided shall be designed to operate in a liquid temperature up to 104°F as specified by the National Electrical Manufacturers Association (NEMA) and Factory Mutual (FM).

B. The pump and motor assembly shall be capable of up to 10 evenly spaced starts per hour and designed for continuous operation at full nameplate load while the motor is completely submerged. The use of shower systems, secondary pumps or cooling fans to cool the motor shall not be acceptable.

C. The pump(s), motor(s), mechanical seals, level controls, control panel, and access cover and frame shall be supplied by the same manufacturer to achieve standardization of operation, maintenance, spare parts, manufacturer's service and warranty. All materials shall be of domestic origin only. The CONTRACTOR shall ensure proper functioning of all equipment associated with this project.

D. All abrasions and other defective areas in items furnished shall be repaired or replaced with no additional cost to the OWNER. Coatings using primers and paints supplied by the pump supplier as stated in this specification may be used to touch-up exposed metal surfaces that may have been damaged.

WARRANTY

A. All materials and workmanship associated with this project shall have a warranty of two (2) years from the date established on the Certificate of Construction Completion. This warranty shall include all costs associated with parts, labor, freight and all associated appurtenances to alleviate the defective project elements. Defective parts shall be replaced at no charge with a new or remanufactured part.

BEFCO ENGINEERING, INC.
EXPERIENCE

A. The pump manufacturer shall have a minimum of 10,000 heavy-duty submersible wastewater pumps installed and operating for no less than 5 years in the United States.

PARTS AND SERVICE

A. The lift station supplier shall have spare parts for all equipment within a 150-mile radius of the project site and be capable of providing parts and factory-approved service on a 24-hour basis. The service must be provided by qualified factory-trained mechanics.

SUBMITTALS

A. Submittal data shall be provided to show full compliance with these specifications, plans or other specifications that will influence the proper operation of the pump(s). The CONTRACTOR shall provide an electronic copy of all submittals in accordance with terms listed in the Special Conditions and as outlined below. Standard submittal for approval must consist of but not limited to the following:

- Performance Curves
- Pump Outline Drawing
- Station Drawing for Accessories
- Detailed Electrical Data
- Control Drawing and Data
- Access Frame Drawing
- Typical Installation Guides
- Technical Manuals
- Parts List
- Printed Warranty

Manufacturer’s Equipment Storage Recommendations
Manufacturer’s Standard Recommended Start-Up Report Form
Motor Performance Curve

TESTING

A. Commercial testing/field start up by a factory-trained, pump manufacturer representative shall be performed on all pumps utilized for this project. Testing performed on each shall include, but not limited to, the following inspections:

1. Check seal lubrication and power supply voltage.
2. Impeller, motor rating and electrical connections shall be checked so that it is built for compliance with this specification as to HP, voltage, phase and hertz.
3. The stator motor leads shall be tested for integrity using a meg-ohm meter at the highest setting.
4. Each pump shall be run dry to establish correct rotation prior to submergence.
5. Discharge piping shall be attached, the pump submerged in water and amp readings shall be taken in each leg to check for an imbalanced stator winding. If there is a significant difference in readings, the stator windings shall be checked with a bridge to determine if an unbalanced resistance exists. If so, the stator shall be replaced. Measure motor operating load and no load current.

6. Motor and cable insulation shall be tested for moisture content or insulation defects.

7. The pump shall be removed from the water, meaghered again, dried and the motor housing filled with dielectric oil.

8. Check level control operation and sequence.

B. At the time of shipment, a written quality assurance record may be requested confirming that the above testing and inspection procedures were performed.

C. The pump(s) shall be rejected if the above criterion is not satisfied.

D. Pump manufacturer representative shall instruct the OWNER’S personnel about recommended operation and maintenance procedures associated with the pumping station.

REQUIREMENTS

A. CONTRACTOR shall furnish and install submersible, non-clog wastewater pumps, capable of pumping raw unscreened stormwater or trash, in accordance with the following:

   See attached pump curve and pump specifications.

B. The pumps shall be capable of handling a 2-inch (2") spherical solid. The pumps shall be non-overloading throughout the entire range of operation without employing service factor. The pump shall reserve a minimum service factor of 1.15. The performance curve submitted for approval shall state in addition to head and capacity performance, the pump efficiency, solid handling capacity, and reflect motor service factor.

C. Each pump shall be equipped with a submersible electric motor connected for operation on 240 volts, 3 phase, 60 hertz, 4 wire service with a sufficient length of submersible cable (SUBCAB) suitable for submersible pump applications. The power supply cable shall be sized in accordance with current NEC and ICEA standards and meet with P-MSHA Approval. Each pump shall be supplied with a mating cast iron discharge connection. Each pump shall be fitted with a sufficient amount of lifting chain or stainless steel cable to retrieve the equipment from the wet well bottom from the station top.
CONSTRUCTION

A. The pump shall be a centrifugal, non-clog, solids handling, submersible, wastewater type per the attached specifications or an approved equal. The pump volute, motor and seal housing shall be high quality gray cast iron, ASTM A-48, Class 30 with smooth surfaces devoid of blowholes or other irregularities. The pump discharge shall be fitted with a standard ASA 125 lb. flange, faced and drilled. All external mating parts shall be machined and Buna N Rubber O-ring sealed on a beveled edge. Gaskets shall not be acceptable. All nuts, bolts, fasteners, etc. exposed to the pumped liquids shall be 300 series stainless steel.

ELECTRICAL POWER CORD

A. Electrical power cord shall be STW-A, water resistant 600V, 60°C, UL and CSA approved and applied dependent on amp draw for size.

B. The pump shall be triple protected with a compression fitting and two epoxy potted areas at the power cord entry to the pump. A separation between the junction box area of the pump and the motor by a stator lead sealing gland or terminal board shall not be acceptable.

C. The power cable entry into the cord cap assembly shall first be made with a compression fitting. Each individual lead shall be stripped down to bare wire, at staggered intervals, and each strand shall be individually separated. This area of the cord cap shall then be filled with an epoxy compound potting which will prevent water contamination to gain entry even in the event of wicking or capillary attraction.

D. The power cord leads shall then be connected to the motor leads with extra heavy connectors having brass inserts with a screwed wire to wire connection, rather than a terminal board that allows for possible leaks.

E. The connection box wiring shall be separated from the motor housing wiring by stripping each lead down to bare wire, at staggered intervals, and separating each strand. This area shall be filled with an epoxy compound potting. Fiberglass terminal boards which are subject to heat fatigue and cracking, and which may lead to possible leaks shall not be acceptable.

F. The cord cap assembly where bolted to the connection box assembly and the connection box assembly where bolted to the motor housing shall each be sealed with a Buna N Rubber O-ring on a beveled edge to assure proper sealing.

MOTOR

A. The stator, rotor and bearings shall be mounted in a sealed submersible type housing. The stator windings shall have Class F insulation, (155°C. or 311°F.), and a dielectric oil filled motor or air filled motor, NEMA B design. Further protection shall be provided by on winning thermal sensors.
B. The pump and motor shall be specifically designed so that they may be operated partially or completely submerged in the liquid being pumped. The pump shall not require cooling water jackets. Dependence upon, or use of, water jackets for supplemental cooling shall not be acceptable.

C. Stators shall be securely held in place with a removable end ring and threaded fasteners so they may be easily removed in the field without the use of heat or a press. Stators held by a heat shrink fit shall not be acceptable. Stators must be capable of being repaired or rewound by a local motor service station. Units which require service only by the factory shall not be acceptable. No special tools shall be required for pump and motor disassembly.

D. Pump shall be equipped with heat sensors. The heat sensor shall be a low resistance, bi-metal disc that is temperature sensitive. It shall be mounted directly on the stator windings and sized to open at 120°C and automatically reset at 30-35°C differential. The sensors shall stop the motor and activate an alarm. The sensors shall be connected in series with the motor starter coil so that the starter is shall be equipped with 3 leg overload heaters so all normal overloads are protected by the starter.

E. An optional Float Leakage Sensor (FLS) shall be utilized to detect water in the stator chamber for all motors larger than 20 Hp. The FLS will stop the motor and trigger an alarm when actuated. When required, the FLS shall be connected with the thermal switches to the Mini CAS. A Float Leakage Sensor will not be required for this project.

BEARINGS AND SHAFT

A. For a dielectric motor, an upper radial bearing and a lower thrust bearing shall be required. These shall be heavy-duty single row ball bearings which are permanently lubricated by the dielectric oil which fills the motor housing. Double row, sealed grease packed bearings shall not be acceptable. Bearings which require lubrication according to a prescribed schedule shall not be acceptable. The upper radial bearings shall have a minimum B-10 life at the specified condition of 40,000 hours and the lower thrust bearing shall have a minimum B-10 life at the specified condition of 40,000 hours. Bearings shall be locally available.

B. For air filled motor, bearings shall be double-shielded, permanently lubricated high-temp C3 ball bearings rated for B-10 life of 60,000 hours.

C. The shaft shall be machined from a solid 303 stainless steel forging and be a design which is of large diameter with minimum overhang to reduce shaft deflection and prolong bearing life.
SEALS

A. The pump shall have two mechanical seals, mounted in tandem, with an oil chamber between the seals. The lower seal shall be replaceable without disassembly of the seal chamber and without the use of special tools. Pump-cut vanes shall be present on the backside of the impeller to keep contaminates out of the seal area. Units which require the use of tungsten-carbide seals or foreign manufactured seals shall not be acceptable. Seals shall be locally available.

B. The pump shall be equipped with a seal leak detection probe and warning system. This shall be designed to alert maintenance personnel of lower seal failure without having to take the unit out of service for inspection or requiring access for checking seal chamber oil level and consistency.

C. There shall be an electric probe or seal failure sensor installed in the seal chamber between the two tandem mechanical seals. If the lower seal fails, contaminants which enter the seal chamber shall be detected by the sensor and send a signal to operate the specified warning device.

D. Units equipped with opposed mechanical seals shall not be acceptable.

IMPELLER

A. Impeller shall be multi-vane, enclosed non-clogging design and have pump-out vanes on the front and backside of the impeller to prevent grit and other materials from collecting in the seal area. Single vane design impellers which cannot be easily trimmed and which do not maintain balance with wear causing shaft deflections and reducing seal and bearing life are not acceptable. Impeller shall not require coating. Because most impeller coatings do not remain beyond the very early life of the impeller, efficiency and other performance data submitted shall be based on performance with an uncoated impeller. Attempts to improve efficiency by coating impeller shall not be acceptable. The impeller shall be manufactured from ASTM A-48, Class 30 materials.

B. Impellers shall be dynamically balanced. The tolerance values shall be as listed below according to the International Standard Organization grade 6.3 for rotors in rigid frames. The tolerance is to be split equally between the two balance planes which are the two impeller shrouds.

<table>
<thead>
<tr>
<th>RPM</th>
<th>TOLERANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500</td>
<td>.01 in. - oz./lb. of impeller weight</td>
</tr>
<tr>
<td>1750</td>
<td>.02 in. - oz./lb. of impeller weight</td>
</tr>
<tr>
<td>1150</td>
<td>.026 in. - oz./lb. of impeller weight</td>
</tr>
<tr>
<td>870</td>
<td>.03 in. - oz./lb. of impeller weight</td>
</tr>
</tbody>
</table>
C. The impeller shall be slip fit to a tapered shaft and key driven. A300 series stainless steel washer and impeller bolt shall be used to fasten the impeller to the shaft. Straight end shafts and/or threaded shafts for attachment of the impeller shall not be acceptable.

CASING

A. The casing shall be of the end suction volute type having sufficient strength and thickness to withstand all stress and strain from service at full operating pressure and load. The casing shall be of the centerline discharge type equipped with an automatic pipe coupling arrangement for ease of installation and piping alignment. The design shall be such that the pumps will be automatically connected to the discharge piping when lowered into position with the guide rails. The casing shall be accurately machined and bored for register fits with the suction and casing covers.

B. A volute case wearing ring shall be provided to minimize impeller wear. The wear ring shall be bronze ASTM # B584-932 and held by 300 series stainless steel fasteners. The wear ring shall be easily replaceable in the field. Wear rings of any other material shall not be acceptable.

ALUMINUM ACCESS COVER AND SAFETY GRATING

A. The CONTRACTOR shall furnish and install aluminum access frames and covers for the top of the wet well. The frame and cover shall be fabricated of ¼" structural grade aluminum rated for 300 pounds per square foot live load. The frame and cover shall be sized according to the pump manufacturer's representative. The covers shall be equipped with stainless steel hinges, stainless steel hardware, padlock hasp, and hold-open arm. In addition, both access frames shall have hinged aluminum safety grating.

PAINTING

A. The pump shall be painted after assembly, but before testing, with a dark green water reducible air dry enamel. The paint shall be applied in one coat, with a minimum mil thickness of 4-6 mils covering all exterior surfaces. The paint shall be air dried after testing and before painting.

SERVICEABILITY

A. The complete rotating assembly shall be capable of being removed from the volute without disturbing the suction piping, discharge piping, and volute. The motor housing, seal housing with seal plate and impeller still attached to the shaft shall be capable of being lifted out of the volute case from the top as one assembly.

B. The pump(s) shall be automatically and firmly connected to the discharge connection, guided by no less than two (2)-DUPLEX guide rails extending from
the top of the wet well to discharge connection. The pumps shall be automatically connected to the discharge connection elbow when lowered into position and shall be easily removed for inspection or service. There shall be no need for personnel to enter the wet well. A machined metal to metal watertight contact shall be used to seal the pumping unit to the discharge connection.

Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor.

**SUPPORT**

A. Though the pump may not require feet to support the unit while installed, the pump volute must have feet to support the unit when removed for service. Units which do not have feet upon which the unit can be supported when removed for service shall not be acceptable.
Technical Specification No. 99

Duplex Control Panel

These specifications shall govern all work necessary to furnish, install, and place into operation a duplex control panel. This panel shall be designed for an outdoor and flood prone installation. Enclosures shall be rated NEMA 4X.

CONTROL PANEL

Pump manufacturer's duplex control system shall be designed to function with pumping units, factory-wired and tested. Controls to be equipped with automatic / off / on switch to allow for automatic start and stop and permit manual operation at the panel. The control panel is to be UL listed and manufactured in a UL approved facility.

The control function provides for the operation of the lead pump under normal conditions. If the incoming flow exceeds the pumping capacity of the lead pump, the lag pump will automatically start in order to handle this increased flow. As the flow decreases, both pumps will cut off at elevation as shown on the plans. If liquid level rises to alarm level, then audio and visual alarms will be activated. The lead pump will alternate after each pumping cycle.

All control voltage to the liquid level sensor shall be a maximum of 24 volts and shall power 24 volt plug-in style relays to enable motor starter coils to operate at 120 volts. In the event of phase reversal, loss of phase, or low voltage, control voltage will be interrupted through the phase monitor. The phase monitor will automatically reset upon removal of any and all of the above conditions.

The control panel shall be NEMA-4X 316 stainless steel enclosure, with a polished aluminum hinged dead front door on a continuous piano hinge and removable sub-panel. The inner aluminum door, mounted on continuous hinge, will be furnished for protection against exposed wiring and will have cutouts for access to the circuit breakers. Mounted on the inner door will be pump run lights, level indication lights, hand-off-auto switches, and a fifteen (15) amp duplex receptacle. A laminated schematic sheet will be permanently affixed to the interior of the enclosure door. A final as-built drawing encapsulated in mylar shall be attached to the inside of the front door.

A thermal magnetic molded case heavy-duty type circuit breaker shall be supplied as branch circuit protection for each pump motor. The circuit breaker must have a minimum ampere interrupting capacity of 14,000 symmetrical RMS amps. Motor starters shall be standard NEMA size, FVNR with a three-line bimetal ambient compensated overload relay and heater element. The motor starter shall have a horsepower rating not less than the rated motor horsepower.

A 480 / 120 volt control transformer (not required with a 240 volt system) shall be provided with sufficient capacity to power the motor starter's holding coils, run lights,
elapsed time meters, and level controls. A 120 volt / 24 volt transformer shall be provided to power level floats and 24 volt relays.

An H-O-A selector switch shall be provided for each pump. The H-O-A selector switches shall be heavy-duty type rated as a NEMA-4X oil tight switch with 10 amp contacts. Elapsed time meters shall be provided to record the running time of each pump. The meters shall be the non-reset, 120 VAC digital type with a minimum range of 9,999.9 hours. The motor controller shall incorporate level indicating and running pilot lights for each pump. The lights shall have an interchangeable shatter resistant lens. Motor running indicator lights shall have green lens and level indicator lights shall have amber lens. LED’s will not be acceptable. One 120 VAC, 50 watt space heater shall be installed the bottom of the motor controller. The heater shall have a rust-resistant iron sheath and slots in each mounting tab to accommodate secondary insulation bushing for mounting. A thermostatic control shall be installed in the top of the motor controller for controlling the space heater temperature. The thermostat shall have an adjustable operating range from 35 degrees F to 90 degrees F and shall also have SPST, snap acting contacts rated at 25 amps at 120 VAC. A phase monitor shall be provided to protect against single phasing, under-voltage, and phase reversal. The monitor shall have an adjustable operating range and a response time of two seconds. The contact arrangement shall be DPDT with a minimum contact rating of 3 amps at 600 VAC resistive.

The level control circuit shall include a duplex pump alternator. The alternators shall be the solid-state plug-in type with a 5 amp, 120 volt output rating and pump sequence indicator lamps. An alternator/test/off switch shall be provided for alternator test and bypass function.

A lightning arrester shall be connected to the incoming service and shall be designed to limit the magnitude of the voltage impressed on the motor windings in the event that the system is subjected to lightning surge voltages. The arrestors shall have a response time of 5 nanoseconds and withstand a surge of 6,500 amperes.

High-level alarm light and buzzer shall be mounted on the top of the control panel. The lamp shall be complete with a 120 VAC, 100 watt incandescent bulb, and red lexan shatterproof globe.

All component parts in the control panel shall be permanently marked and identified. Marking shall be on the back plate adjacent to the component. All control conductors shall be identified with wire markers as close as practical to each end of the conductors.

The motors shall contain winding thermal sensors. In the event of an overtemp condition the motor will be shut down until it is sufficiently cool to automatically reset.

The five (5) float controls shall consist of polypropylene sealed mercury float switches. One sensor shall be provided for each control level. Sensors to be of the enclosed weight type, and set in accordance with plan elevations. Cable shall be heavy neoprene-jacketed cable furnished in one continuous length from sensor to control panel. A 316 stainless steel cable holder with at least six (6) hooks shall be provided for attachment to the aluminum hatch frame or concrete wet well ceiling.
The duplex control panel installation shall also include meter socket and meter, in accordance with the requirements of the local power company, a main disconnect / load center in a NEMA-4X stainless steel enclosure, and a manual transfer switch.

A factory-trained service representative shall check panel for correct connections, check rotation, voltage, amperage, and operate pumps through a complete cycle. High-level alarms and alternator shall be demonstrated. Operating instructions shall be provided as required. As-built drawings and operating and maintenance manuals will be presented at time of start-up.

3/22
Item 506
Temporary Erosion, Sedimentation, and Environmental Controls

1. DESCRIPTION

Install, maintain, and remove erosion, sedimentation, and environmental control measures to prevent or reduce the discharge of pollutants in accordance with the Storm Water Pollution Prevention Plan (SWP3) on the plans and the Texas Pollutant Discharge Elimination System (TPDES) General Permit TXR150000. Control measures are defined as Best Management Practices used to prevent or reduce the discharge of pollutants. Control measures include, but are not limited to, rock filter dams, temporary pipe slope drains, temporary paved flumes, construction exits, earthwork for erosion control, pipe, construction perimeter fence, sandbags, temporary sediment control fence, biodegradable erosion control logs, vertical tracking, temporary or permanent seeding, and other measures. Erosion and sediment control devices must be selected from the Erosion Control Approved Products or Sediment Control Approved Products lists. Perform work in a manner to prevent degradation of receiving waters, facilitate project construction, and comply with applicable federal, state, and local regulations. Ensure the installation and maintenance of control measures is performed in accordance with the manufacturer's or designer's specifications.

Provide the Contractor Certification of Compliance before performing SWP3 or soil disturbing activities. By signing the Contractor Certification of Compliance, the Contractor certifies they have read and understand the requirements applicable to this project pertaining to the SWP3, the plans, and the TPDES General Permit TXR150000. The Contractor is responsible for any penalties associated with non-performance of installation or maintenance activities required for compliance. Ensure the most current version of the certificate is executed for this project.

2. MATERIALS

Furnish materials in accordance with the following:
- Item 161, "Compost,"
- Item 432, "Riprap," and
- Item 556, "Pipe Underdrains."

2.1. Rock Filter Dams.

2.1.1. Aggregate. Furnish aggregate with approved hardness, durability, cleanliness, and resistance to crumbling, flaking, and eroding. Provide the following:
- Types 1, 2, and 4 Rock Filter Dams. Use 3 to 6 in. aggregate.
- Type 3 Rock Filter Dams. Use 4 to 8 in. aggregate.

2.1.2. Wire. Provide minimum 20 gauge galvanized wire for the steel wire mesh and tie wires for Types 2 and 3 rock filter dams. Type 4 dams require:
- a double-twisted, hexagonal weave with a nominal mesh opening of 2-1/2 × 3-1/4 in.;
- minimum 0.0865 in. steel wire for netting;
- minimum 0.1063 in. steel wire for selvages and corners; and
- minimum 0.0865 in. for binding or tie wire.

2.1.3. Sandbag Material. Furnish sandbags meeting Section 506.2.8., "Sandbags," except that any gradation of aggregate may be used to fill the sandbags.
2.2. Temporary Pipe Slope Drains. Provide corrugated metal pipe, polyvinyl chloride (PVC) pipe, flexible tubing, watertight connection bands, grommet materials, prefabricated fittings, and flared entrance sections that conform to the plans. Recycled and other materials meeting these requirements are allowed if approved.

Furnish concrete in accordance with Item 432, "Riprap."

2.3. Temporary Paved Flumes. Furnish asphalt concrete, hydraulic cement concrete, or other comparable non-erodible material that conforms to the plans. Provide rock or rubble with a minimum diameter of 6 in. and a maximum volume of 1/2 cu. ft. for the construction of energy dissipaters.

2.4. Construction Exits. Provide materials that meet the details shown on the plans and this Section.

2.4.1. Rock Construction Exit. Provide crushed aggregate for long- and short-term construction exits. Furnish aggregates that are clean, hard, durable, and free from adherent coatings such as salt, alkali, dirt, clay, loam, shale, soft or flaky materials, and organic and injurious matter. Use 4- to 8-in. aggregate for Type 1. Use 2- to 4-in. aggregate for Type 3.

2.4.2. Timber Construction Exit. Furnish No. 2 quality or better railroad ties and timbers for long-term construction exits, free of large and loose knots and treated to control rot. Fasten timbers with nuts and bolts or lag bolts, of at least 1/2 in. diameter, unless otherwise shown on the plans or allowed. Provide plywood or pressed wafer board at least 1/2 in. thick for short-term exits.

2.4.3. Foundation Course. Provide a foundation course consisting of flexible base, bituminous concrete, hydraulic cement concrete, or other materials as shown on the plans or directed.

2.5. Embankment for Erosion Control. Provide rock, loam, clay, topsoil, or other earth materials that will form a stable embankment to meet the intended use.

2.6. Pipe. Provide pipe outlet material in accordance with Item 556, "Pipe Underdrains," and details shown on the plans.

2.7. Construction Perimeter Fence.

2.7.1. Posts. Provide essentially straight wood or steel posts that are at least 60 in. long. Furnish soft wood posts with a minimum diameter of 3 in., or use nominal 2 x 4 in. boards. Furnish hardwood posts with a minimum cross-section of 1-1/2 x 1-1/5 in. Furnish T- or L-shaped steel posts with a minimum weight of 1.25 lb. per foot.

2.7.2. Fence. Provide orange construction fencing as approved.

2.7.3. Fence Wire. Provide 14 gauge or larger galvanized smooth or twisted wire. Provide 16 gauge or larger tie wire.

2.7.4. Flagging. Provide brightly-colored flagging that is fade-resistant and at least 3/4 in. wide to provide maximum visibility both day and night.

2.7.5. Staples. Provide staples with a crown at least 1/2 in. wide and legs at least 1/2 in. long.

2.7.6. Used Materials. Previously used materials meeting the applicable requirements may be used if approved.

2.8. Sandbags. Provide sandbag material of polypropylene, polyethylene, or polyamide woven fabric with a minimum unit weight of 4 oz. per square yard, a Mullien burst-strength exceeding 300 psi, and an ultraviolet stability exceeding 70%.

Use natural coarse sand or manufactured sand meeting the gradation given in Table 1 to fill sandbags. Filled sandbags must be 24 to 30 in. long, 16 to 18 in. wide, and 6 to 8 in. thick.
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<tr>
<th>Sieve Size</th>
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<tr>
<td>#4</td>
<td>Maximum 5%</td>
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<td>#100</td>
<td>Minimum 60%</td>
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<td>#200</td>
<td>Minimum 95%</td>
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Aggregate may be used instead of sand for situations where sandbags are not adjacent to traffic. The aggregate size must not exceed 3/8 in.

2.9. Temporary Sediment Control Fence. Provide a net-reinforced fence using woven geo-textile fabric. logos visible to the traveling public will not be allowed.


2.9.2. Posts. Provide essentially straight wood or steel posts with a minimum length of 48 in., unless otherwise shown on the plans. Furnish soft wood posts at least 3 in. in diameter, or use nominal 2 x 4 in. boards. Furnish hardwood posts with a minimum cross-section of 1-1/2 x 1-1/2 in. Furnish T- or L-shaped steel posts with a minimum weight of 1.25 lb. per foot.

2.9.3. Net Reinforcement. Provide net reinforcement of at least 12.5 gauge (SWG) galvanized welded wire mesh, with a maximum opening size of 2 x 4 in., at least 24 in. wide, unless otherwise shown on the plans.

2.9.4. Staples. Provide staples with a crown at least 3/4 in. wide and legs 1/2 in. long.

2.9.5. Used Materials. Use recycled material meeting the applicable requirements if approved.

2.10. Biodegradable Erosion Control Logs.

2.10.1. Core Material. Furnish core material that is biodegradable or recyclable. Use compost, mulch, aspen excelsior wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or any other acceptable material unless specifically called out on the plans. Permit no more than 5% of the material to escape from the containment mesh. Furnish compost meeting the requirements of Item 161, "Compost."

2.10.2. Containment Mesh. Furnish containment mesh that is 100% biodegradable, photodegradable, or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or any other acceptable material.

Furnish biodegradable or photodegradable containment mesh when log will remain in place as part of a vegetative system.

Furnish recyclable containment mesh for temporary installations.

2.10.3. Size. Furnish biodegradable erosion control logs with diameters shown on the plans or as directed. Stuff containment mesh densely so logs do not deform.

3. QUALIFICATIONS, TRAINING, AND EMPLOYEE REQUIREMENTS

3.1. Contractor Responsible Person Environmental (CRPE) Qualifications and Responsibilities. Provide and designate in writing at the preconstruction conference a CRPE and alternate CRPE who have overall responsibility for the storm water management program. The CRPE will implement storm water and erosion control practices; will oversee and observe storm water control measure monitoring and management; will monitor the project site daily and produce daily monitoring reports as long as there are BMPs in place or soil disturbing activities are evident to ensure compliance with the SWP3 and TPODES General Permit TXR150000. During time suspensions when work is not occurring or on contract non-work days, daily inspections are not required unless a rain event has occurred. The CRPE will provide recommendations on
how to improve the effectiveness of control measures. Attend the Department’s preconstruction conference for the project. Ensure training is completed as identified in Section 506.3.3., “Training,” by all applicable personnel before employees work on the project. Document and submit a list, signed by the CRPE, of all applicable Contractor and subcontractor employees who have completed the training. Include the employee’s name, the training course name, and date the employee completed the training. Provide the most current list at the preconstruction conference or before SWP3 or soil disturbing activities. Update the list as needed and provide the updated list when updated.

3.2. Contractor Superintendent Qualifications and Responsibilities. Provide a superintendent that is competent, have experience with and knowledge of storm water management, and is knowledgeable of the requirements and conditions of the TPDES General Permit TXR150000. The superintendent will manage and oversee the day to day operations and activities at the project site; work with the CRPE to provide effective storm water management at the project site; represent and act on behalf of the Contractor; and attend the Department’s preconstruction conference for the project.

3.3. Training. All Contractor and subcontractor employees involved in soil disturbing activities, small or large structures, storm water control measures, and seeding activities must complete training as prescribed by the Department.

4. CONSTRUCTION

4.1. Contractor Responsibilities. Implement the SWP3 for the project site in accordance with the plans and specifications, TPDES General Permit TXR150000, and as directed. Coordinate storm water management with all other work on the project. Develop and implement an SWP3 for project-specific material supply plants within and outside of the Department’s right of way in accordance with the specific or general storm water permit requirements. Prevent water pollution from storm water associated with construction activity from entering any surface water or private property on or adjacent to the project site.

4.2. Implementation. The CRPE, or alternate CRPE, must be accessible by phone and able to respond to project-related storm water management or other environmental emergencies 24 hr. per day.

4.2.1. Commencement. Implement the SWP3 as shown and as directed. Contractor-proposed recommendations for changes will be allowed as approved. Conform to the established guidelines in the TPDES General Permit TXR150000 to make changes. Do not implement changes until approval has been received and changes have been incorporated into the plans. Minor adjustments to meet field conditions are allowed and will be recorded in the SWP3.

4.2.2. Phasing. Implement control measures before the commencement of activities that result in soil disturbance. Phase and minimize the soil disturbance to the areas shown on the plans. Coordinate temporary control measures with permanent control measures and all other work activities on the project to assure economical, effective, safe, and continuous water pollution prevention. Provide control measures that are appropriate to the construction means, methods, and sequencing allowed by the Contract. Exercise precaution throughout the life of the project to prevent pollution of ground waters and surface waters. Schedule and perform clearing and grubbing operations so that stabilization measures will follow immediately thereafter if project conditions permit. Bring all grading sections to final grade as soon as possible and implement temporary and permanent control measures at the earliest time possible. Implement temporary control measures when required by the TPDES General Permit TXR150000 or otherwise necessitated by project conditions.

Do not prolong final grading and shaping. Preserve vegetation where possible throughout the project, and minimize clearing, grubbing, and excavation within stream banks, bed, and approach sections.

4.3. General.

4.3.1. Temporary Alterations or Control Measure Removal. Alteration or removal of control measures is allowed when control measures are restored within the same working day.
4.3.2. **Stabilization.** Initiate stabilization for disturbed areas no more than 14 days after the construction activities in that portion of the site have temporarily or permanently ceased. Establish a uniform vegetative cover or use another stabilization practice in accordance with the TPDES General Permit TXR150000.

4.3.3. **Finished Work.** Remove and dispose of all temporary control measures upon acceptance of vegetative cover or other stabilization practice unless otherwise directed. Complete soil disturbing activities and establish a uniform perennial vegetative cover. A project will not be considered for acceptance until a vegetative cover of 70% density of existing adjacent undisturbed areas is obtained or equivalent permanent stabilization is obtained in accordance with the TPDES General Permit TXR150000. An exception will be allowed in arid areas as defined in the TPDES General Permit TXR150000.

4.3.4. **Restricted Activities and Required Precautions.** Do not discharge onto the ground or surface waters any pollutants such as chemicals, raw sewage, fuels, lubricants, coolants, hydraulic fluids, bitumens, or any other petroleum product. Operate and maintain equipment on-site to prevent actual or potential water pollution. Manage, control, and dispose of litter on-site such that no adverse impacts to water quality occur. Prevent dust from creating a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property. Wash out concrete trucks only as described in the TPDES General Permit TXR150000. Use appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water (i.e., dewatering). Prevent discharges that would contribute to a violation of Edwards Aquifer Rules, water quality standards, the impairment of a listed water body, or other state or federal law.

4.4. **Installation, Maintenance, and Removal Work.** Perform work in accordance with the SWP3, according to manufacturers' guidelines, and in accordance with the TPDES General Permit TXR150000. Install and maintain the integrity of temporary erosion and sedimentation control devices to accumulate silt and debris until soil disturbing activities are completed and permanent erosion control features are in place or the disturbed area has been adequately stabilized as approved.

The Department will inspect and document the condition of the control measures at the frequency shown on the plans and will provide the Construction SWP3 Field Inspection and Maintenance Reports to the Contractor. Make corrections as soon as possible before the next anticipated rain event or within 7 calendar days after being able to enter the worksite for each control measure. The only acceptable reason for not accomplishing the corrections with the time frame specified is when site conditions are "Too Wet to Work." Take immediate action if a correction is deemed critical as directed. When corrections are not made within the established time frame, all work will cease on the project and time charges will continue while the control measures are brought into compliance. Commence work once the Engineer reviews and documents the project is in compliance. Commencing work does not release the Contractor of the liability for noncompliance of the SWP3, plans, or TPDES General Permit TXR150000.

The Engineer may limit the disturbed area if the Contractor cannot control soil erosion and sedimentation resulting from the Contractor's operations. Implement additional controls as directed.

Remove devices upon approval or as directed. Finish-grade and dress the area upon removal. Stabilize disturbed areas in accordance with the permit, and as shown on the plans or directed. Materials removed are considered consumed by the project. Retain ownership of stockpiled material and remove it from the project when new installations or replacements are no longer required.

4.4.1. **Rock Filter Dams for Erosion Control.** Remove trees, brush, stumps, and other objectionable material that may interfere with the construction of rock filter dams. Place sandbags as a foundation when required or at the Contractor's option.

Place the aggregate to the lines, height, and slopes specified, without undue voids for Types 1, 2, 3, and 5. Place the aggregate on the mesh and then fold the mesh at the upstream side over the aggregate and secure it to itself on the downstream side with wire ties, or hog rings for Types 2 and 3, or as directed. Place rock filter dams perpendicular to the flow of the stream or channel unless otherwise directed. Construct filter dams according to the following criteria unless otherwise shown on the plans:
4.4.1.1. Type 1 (Non-Reinforced).
- Height. At least 18 in. measured vertically from existing ground to top of filter dam.
- Top Width. At least 2 ft.
- Slop es. No steeper than 2:1.

4.4.1.2. Type 2 (Reinforced).
- Height. At least 18 in. measured vertically from existing ground to top of filter dam.
- Top Width. At least 2 ft.
- Slop es. No steeper than 2:1.

4.4.1.3. Type 3 (Reinforced).
- Height. At least 36 in. measured vertically from existing ground to top of filter dam.
- Top Width. At least 2 ft.
- Slop es. No steeper than 2:1.

4.4.1.4. Type 4 (Sack Gabions). Unfold sack gabions and smooth out kinks and bends. Connect the sides by lacing in a single loop–double loop pattern on 4- to 5-in. spacing for vertical filling. Pull the end facing rod at one end until tight, wrap around the end, and twist 4 times. Fill with stone at the filling end, pull the rod tight, cut the wire with approximately 6 in. remaining, and twist wires 4 times.

Place the sack flat in a filling trough, fill with stone, connect sides, and secure ends as described above for horizontal filling.

Lift and place without damaging the gabion. Shape sack gabions to existing contours.

4.4.1.5. Type 5. Provide rock filter dams as shown on the plans.

4.4.2. Temporarily Pipe Slope Drains. Install pipe with a slope as shown on the plans or as directed. Construct embankment for the drainage system in 8-in. lifts to the required elevations. Hand-tamp the soil around and under the entrance section to the top of the embankment as shown on the plans or as directed. Form the top of the embankment or earth dike over the pipe slope drain at least 1 ft. higher than the top of the inlet pipe at all points. Secure the pipe with hold-downs or hold-down grommets spaced a maximum of 10 ft. on center. Construct the energy dissipators or sediment traps as shown on the plans or as directed. Construct the sediment trap using concrete or rubble riprap in accordance with Item 432, "Riprap," when designated on the plans.

4.4.3. Temporarily Paved Flumes. Construct paved flumes as shown on the plans or as directed. Provide excavation and embankment (including compaction of the subgrade) of material to the dimensions shown on the plans unless otherwise indicated. Install a rock or rubble riprap energy dissipater, constructed from the materials specified above, to a minimum depth of 9 in. at the flume outlet to the limits shown on the plans or as directed.

4.4.4. Construction Exits. Prevent traffic from crossing or exiting the construction site or moving directly onto a public roadway, alley, sidewalk, parking area, or other right of way areas other than at the location of construction exits when tracking conditions exist. Construct exits for either long- or short-term use.

4.4.4.1. Long-Term. Place the exit over a foundation course as required. Grade the foundation course or compacted subgrade to direct runoff from the construction exits to a sediment trap as shown on the plans or as directed. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed.

4.4.4.1.1. Type 1. Construct to a depth of at least 8 in. using crushed aggregate as shown on the plans or as directed.

4.4.4.1.2. Type 2. Construct using railroad ties and timbers as shown on the plans or as directed.
4.4.4.2. Short-Term.

4.4.4.2.1. Type 3. Construct using crushed aggregate, plywood, or wafer board. This type of exit may be used for daily operations where long-term exits are not practical.

4.4.4.2.2. Type 4. Construct as shown on the plans or as directed.

4.4.5. Earthwork for Erosion Control. Perform excavation and embankment operations to minimize erosion and to remove collected sediments from other erosion control devices.

4.4.5.1. Excavation and Embankment for Erosion Control Features. Place earth dikes, swales, or combinations of both along the low crown of daily lift placement, or as directed, to prevent runoff spillover. Place swales and dikes at other locations as shown on the plans or as directed to prevent runoff spillover to divert runoff. Construct cuts with the low end blocked with undisturbed earth to prevent erosion of hillsides. Construct sediment traps at drainage structures in conjunction with other erosion control measures as shown on the plans or as directed.

Create a sediment basin, where required, providing 3,600 cu. ft. of storage per acre drained, or equivalent control measures for drainage locations that serve an area with 10 or more disturbed acres at one time, not including offsite areas.

4.4.5.2. Excavation of Sediment and Debris. Remove sediment and debris when accumulation affects the performance of the devices, after a rain, and when directed.

4.4.6. Construction Perimeter Fence. Construct, align, and locate fencing as shown on the plans or as directed.

4.4.6.1. Installation of Posts. Embed posts 18 in. deep or adequately anchor in rock, with a spacing of 8 to 10 ft.

4.4.6.2. Wire Attachment. Attach the top wire to the posts at least 3 ft. from the ground. Attach the lower wire midway between the ground and the top wire.

4.4.6.3. Flag Attachment. Attach flagging to both wire strands midway between each post. Use flagging at least 18 in. long. Tie flagging to the wire using a square knot.

4.4.7. Sandbags for Erosion Control. Construct a berm or dam of sandbags that will intercept sediment-laden storm water runoff from disturbed areas, create a retention pond, detain sediment, and release water in sheet flow. Fill each bag with sand so that at least the top 6 in. of the bag is unfulfilled to allow for proper tying of the open end. Place the sandbags with their tied ends in the same direction. Offset subsequent rows of sandbags 1/2 the length of the preceding row. Place a single layer of sandbags downstream as a secondary debris trap. Place additional sandbags as necessary or as directed for supplementary support to berms or dams of sandbags or earth.

4.4.8. Temporary Sediment-Control Fence. Provide temporary sediment-control fence near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the fence into erosion-control measures used to control sediment in areas of higher flow. Install the fence as shown on the plans, as specified in this Section, or as directed.

4.4.8.1. Installation of Posts. Embed posts at least 18 in. deep, or adequately anchor, if in rock, with a spacing of 6 to 8 ft. and install on a slight angle toward the runoff source.

4.4.8.2. Fabric Anchoring. Dig trenches along the uphill side of the fence to anchor 6 to 8 in. of fabric. Provide a minimum trench cross-section of 6 x 6 in. Place the fabric against the side of the trench and align approximately 2 in. of fabric along the bottom in the upstream direction. Backfill the trench, then hand-tamp.

4.4.8.3. Fabric and Net Reinforcement Attachment. Attach the reinforcement to wooden posts with staples, or to steel posts with T-clips, in at least 4 places equally spaced unless otherwise shown on the plans. Sewn
vertical pockets may be used to attach reinforcement to end posts. Fasten the fabric to the top strand of reinforcement by hog rings or cord every 15 in. or less.

4.4.8.4. Fabric and Net Splices. Locate splices at a fence post with a minimum lap of 6 in. attached in at least 6 places equally spaced unless otherwise shown on the plans. Do not locate splices in concentrated flow areas.

Requirements for installation of used temporary sediment-control fence include the following:
- fabric with minimal or no visible signs of biodegradation (weak fibers),
- fabric without excessive patching (more than 1 patch every 15 to 20 ft.),
- posts without bends, and
- backing without holes.

4.4.9. Biodegradable Erosion Control Logs. Install biodegradable erosion control logs near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the biodegradable erosion control logs into the erosion measures used to control sediment in areas of higher flow. Install, align, and locate the biodegradable erosion control logs as specified below, as shown on the plans, or as directed.

Secure biodegradable erosion control logs in a method adequate to prevent displacement as a result of normal rain events, prevent damage to the logs, and as approved, such that flow is not allowed under the logs. Temporarily removing and replacing biodegradable erosion logs as to facilitate daily work is allowed at the Contractor’s expense.

4.4.10. Vertical Tracking. Perform vertical tracking on slopes to temporarily stabilize soil. Provide equipment with a track undercarriage capable of producing a linear soil impression measuring a minimum of 12 in. long × 2 to 4 in. wide × 1/2 to 2 in. deep. Do not exceed 12 in. between track impressions. Install continuous linear track impressions where the 12 in. length impressions are perpendicular to the slope. Vertical tracking is required on projects where soil disturbing activities have occurred unless otherwise approved.

4.5. Monitoring and Documentation. Monitor the control measures on a daily basis as long as there are BMPs in place and/or soil disturbing activities are evident to ensure compliance with the SWP3 and TPDES General Permit TXR150000. During time suspensions when work is not occurring or contract non-work days, daily inspections are not required unless a rain event has occurred. Monitoring will consist of, but is not limited to, observing, inspecting, and documenting site locations with control measures and discharge points to provide maintenance and inspection of controls as described in the SWP3. Keep written records of daily monitoring. Document in the daily monitoring report the control measure condition, the date of inspection, required corrective actions, responsible person for making the corrections, and the date corrective actions were completed. Maintain records of all monitoring reports at the project site or at an approved place. Provide copies within 7 days. Together, the CRPE and an Engineer’s representative will complete the Construction Stage Gate Checklist on a periodic basis as directed.

5. MEASUREMENT

5.1. Rock Filter Dams. Installation or removal of rock filter dams will be measured by the foot or by the cubic yard. The measured volume will include sandbags, when used.

5.1.1. Linear Measurement. When rock filter dams are measured by the foot, measurement will be along the centerline of the top of the dam.

5.1.2. Volume Measurement. When rock filter dams are measured by the cubic yard, measurement will be based on the volume of rock computed by the method of average end areas.

5.1.2.1. Installation. Measurement will be made in final position.

5.1.2.2. Removal. Measurement will be made at the point of removal.
5.2. **Temporary Pipe Slope Drains.** Temporary pipe slope drains will be measured by the foot.

5.3. **Temporary Paved Flumes.** Temporary paved flumes will be measured by the square yard of surface area. The measured area will include the energy dissipater at the flume outlet.

5.4. **Construction Exits.** Construction exits will be measured by the square yard of surface area.

5.5. **Earthwork for Erosion and Sediment Control.**

5.5.1. **Equipment and Labor Measurement.** Equipment and labor used will be measured by the actual number of hours the equipment is operated and the labor is engaged in the work.

5.5.2. **Volume Measurement.**

5.5.2.1. **In Place.**

5.5.2.1.1. **Excavation.** Excavation will be measured by the cubic yard in its original position and the volume computed by the method of average end areas.

5.5.2.1.2. **Embarkment.** Embarkment will be measured by the cubic yard in its final position by the method of average end areas. The volume of embarkment will be determined between:

- the original ground surfaces or the surface upon that the embarkment is to be constructed for the feature and
- the lines, grades and slopes of the accepted embarkment for the feature.

5.5.2.2. **In Vehicles.** Excavation and embarkment quantities will be combined and paid for under “Earthwork (Erosion and Sediment Control, In Vehicle).” Excavation will be measured by the cubic yard in vehicles at the point of removal. Embankment will be measured by the cubic yard in vehicles measured at the point of delivery. Shrinkage or swelling factors will not be considered in determining the calculated quantities.

5.6. **Construction Perimeter Fence.** Construction perimeter fence will be measured by the foot.

5.7. **Sandbags for Erosion Control.** Sandbags will be measured as each sandbag or by the foot along the top of sandbag berms or dams.

5.8. **Temporary Sediment-Control Fence.** Installation or removal of temporary sediment-control fence will be measured by the foot.

5.9. **Biodegradable Erosion Control Logs.** Installation or removal of biodegradable erosion control logs will be measured by the foot along the centerline of the top of the control logs.

5.10. **Vertical Tracking.** Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.

6. **PAYMENT**

The following will not be paid for directly but are subsidiary to pertinent items:

- erosion-control measures for Contractor project-specific locations (PSLs) inside and outside the right of way (such as construction and haul roads, field offices, equipment and supply areas, plants, and material sources);
- removal of litter, unless a separate pay item is shown on the plans;
- repair to devices and features damaged by Contractor operations;
- added measures and maintenance needed due to negligence, carelessness, lack of maintenance, and failure to install permanent controls;
removal and reinstallation of devices and features needed for the convenience of the Contractor;

finish grading and dressing upon removal of the device; and

minor adjustments including but not limited to plumbing posts, reattaching fabric, minor grading to maintain slopes on an erosion embankment feature, or moving small numbers of sandbags.

Stabilization of disturbed areas will be paid for under pertinent Items except vertical parking which is subsidiary.

Furnishing and installing pipe for outfalls associated with sediment traps and ponds will not be paid for directly but is subsidiary to the excavation and embankment under this Item.

6.1. Rock Filter Dams. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid as follows:

6.1.1. Installation. Installation will be paid for as “Rock Filter Dams (Install)” of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

6.1.2. Removal. Removal will be paid for as “Rock Filter Dams (Remove).” This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

When the Engineer directs that the rock filter dam installation or portions thereof be replaced, payment will be made at the unit price bid for “Rock Filter Dams (Remove)” and for “Rock Filter Dams (Install)” of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

6.2. Temporary Pipe Slope Drains. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Temporary Pipe Slope Drains” of the size specified. This price is full compensation for furnishing materials, removal and disposal, furnishing and operating equipment, labor, tools, and incidentals.

Removal of temporary pipe slope drains will not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the pipe slope drain installation or portions thereof be replaced, payment will be made at the unit price bid for “Temporary Pipe Slope Drains” of the size specified, which is full compensation for the removal and reinstallation of the pipe drain.

Earthwork required for the pipe slope drain installation, including construction of the sediment trap, will be measured and paid for under “Earthwork for Erosion and Sediment Control.”

Riprap concrete or stone, when used as an energy dissipater or as a stabilized sediment trap, will be measured and paid for in accordance with Item 432, “Riprap.”

6.3. Temporary Paved Flumes. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Temporary Paved Flume (Install)” or “Temporary Paved Flume (Remove).” This price is full compensation for furnishing and placing materials, removal and disposal, equipment, labor, tools, and incidentals.

When the Engineer directs that the paved flume installation or portions thereof be replaced, payment will be made at the unit price bid for “Temporary Paved Flume (Remove)” and “Temporary Paved Flume (Install).” These prices are full compensation for the removal and replacement of the paved flume and for equipment, labor, tools, and incidentals.

Earthwork required for the paved flume installation, including construction of a sediment trap, will be measured and paid for under “Earthwork for Erosion and Sediment Control.”
6.4. **Construction Exits.** Contractor-required construction exits from off right of way locations or on-right of way PSLs will not be paid for directly but are subsidiary to pertinent items.

The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" for construction exits needed on right of way access to work areas required by the Department will be paid for at the unit price bid for "Construction Exits (Install)" of the type specified or "Construction Exits (Remove)." This price is full compensation for furnishing and placing materials, excavating, removal and disposal, cleaning vehicles, labor, tools, and incidentals.

When the Engineer directs that a construction exit or portion thereof be removed and replaced, payment will be made at the unit prices bid for "Construction Exit (Remove)" and "Construction Exit (Install)" of the type specified. These prices are full compensation for the removal and replacement of the construction exit and for equipment, labor, tools, and incidentals.

Construction of sediment traps used in conjunction with the construction exit will be measured and paid for under "Earthwork for Erosion and Sediment Control."

6.5. **Earthwork for Erosion and Sediment Control.**

6.5.1. **Initial Earthwork for Erosion and Sediment Control.** The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for at the unit price bid for "Excavation (Erosion and Sediment Control, In Place)," "Embankment (Erosion and Sediment Control, In Place)," "Excavation (Erosion and Sediment Control, In Vehicle)," "Embankment (Erosion and Sediment Control, In Vehicle)," or "Earthwork (Erosion and Sediment Control, In Vehicle)."

This price is full compensation for excavation and embankment including hauling, disposal of material not used elsewhere on the project; embankments including furnishing material from approved sources and construction of erosion-control features; and equipment, labor, tools, and incidentals.

Sprinkling and rolling required by this item will not be paid for directly but will be subsidiary to this item.

6.5.2. **Maintenance Earthwork for Erosion and Sediment Control for Cleaning and Restoring Control Measures.** The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid under a Contractor Force Account Item from invoice provided to the Engineer.

This price is full compensation for excavation, embankment, and re-grading including removal of accumulated sediment in various erosion control installations as directed, hauling, and disposal of material not used elsewhere on the project; excavation for construction of erosion-control features; embankments including furnishing material from approved sources and construction of erosion-control features; and equipment, labor, tools, and incidentals.

Earthwork needed to remove and obliterate erosion-control features will not be paid for directly but is subsidiary to pertinent items unless otherwise shown on the plans.

Sprinkling and rolling required by this item will not be paid for directly but will be subsidiary to this item.

6.6. **Construction Perimeter Fence.** The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for at the unit price bid for "Construction Perimeter Fence." This price is full compensation for furnishing and placing the fence; digging, fence posts, wire, and flagging; removal and disposal; and materials, equipment, labor, tools, and incidentals.

Removal of construction perimeter fence will be not be paid for directly but is subsidiary to the installation item. When the Engineer directs that the perimeter fence installation or portions thereof be removed and replaced, payment will be made at the unit price bid for "Construction Perimeter Fence," which is full compensation for the removal and reinstallation of the construction perimeter fence.
6.7. Sandbags for Erosion Control. Sandbags will be paid for at the unit price bid for "Sandbags for Erosion Control" (of the height specified when measurement is by the foot). This price is full compensation for materials, placing sandbags, removal and disposal, equipment, labor, tools, and incidentals.

Removal of sandbags will not be paid for directly but is subsidiary to the Installation Item. When the Engineer directs that the sandbag installation or portions thereof be replaced, payment will be made at the unit price bid for "Sandbags for Erosion Control," which is full compensation for the reinstallation of the sandbags.

6.8. Temporary Sediment-Control Fence. The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:

6.8.1. Installation. Installation will be paid for as "Temporary Sediment-Control Fence (Install)." This price is full compensation for furnishing and operating equipment finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

6.8.2. Removal. Removal will be paid for as "Temporary Sediment-Control Fence (Remove)." This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

6.9. Biodegradable Erosion Control Logs. The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for at the unit price bid as follows:

6.9.1. Installation. Installation will be paid for as "Biodegradable Erosion Control Logs (Install)" of the size specified. This price is full compensation for furnishing and operating equipment finish backfill and grading, staking, proper disposal, labor, materials, tools, and incidentals.

6.9.2. Removal. Removal will be paid for as "Biodegradable Erosion Control Logs (Remove)." This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

6.10. Vertical Tracking. Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.
A. Iron-Body Gate Valves

Resilient-seated gate valves for potable or reclaimed service, including tapping valves, shall conform to AWWA C-509 and Standard Products List item WW-282.

Reduced-wall, resilient-seated gate valves for potable or reclaimed service, including tapping valves, shall conform to AWWA C-515 and Standard Products List item WW-700.

Metal-seated gate valves for potable or reclaimed service, including tapping valves, shall conform to AWWA C-500 and Standard Products List item WW-132.

1. Stem Seals: All valves shall have approved O-ring type stem seals. At least two O-rings shall be in contact with the valve stem where it penetrates the valve body.

2. Operation: All valves shall have non-rising stems with a 2-inch (50 mm) square operating nut, or with a spoke type handwheel when so ordered, turning clockwise to close.

3. Gearing: Gate valves in 24-inch (610 mm) and larger sizes shall be geared and, when necessary for proper bury depth and cover, shall be the horizontal bevel-gear type enclosed in a lubricated gear case.

4. Bypass: Unless otherwise indicated on the Drawings, 30-inch (762 mm) and larger metal-seated gate valves shall be equipped with a bypass of the non-rising stem type which meets the same AWWA standard required for the main valve.

5. Valve Ends: Valve ends shall be push-on, flanged or mechanical joint, as indicated or approved.

   Tapping valves shall have inlet flanges conforming to MSS SP-60, with boltholes drilled per ANSI B16.1 Class 125. Seat rings and body casting shall be over-sized as required to accommodate full size cutters; the outlet end shall be constructed and drilled to allow the drilling machine adapter to be attached directly to the valve.

6. Gear Case: All geared valves shall have enclosed gear cases of the extended type, attached to the valve bonnet in a manner that makes it possible to replace the stem seal without disassembly and without disturbing the gears, bearing or gear lubricant. Gear cases shall be designed and fabricated with an opening to atmosphere so that leakage past the stem seal does not enter the gear case.

7. Valve Body: Double disc gate valves in 30-inch (762 mm) and larger sizes installed in the horizontal position shall have bronze rollers, tracks, scrapers, etc. For reclaimed water valves, the body shall be manufactured in purple, factory painted purple, or field painted purple.

B. Butterfly Valves
Unless otherwise indicated, all valves shall conform to the current "AWWA" Standard C-504, "Rubber-Seated Butterfly Valves," Class 150B, except as modified or supplemented herein.

1. Functional Requirements
   a. Valves shall be the short body design and shall have flanged connections on both ends unless otherwise called for.
   b. Valves shall be of such design that the valve discs will not vibrate or flutter when operated in a throttled position. Valve discs shall be secured to the shafts by means of keys or pins so arranged that the valve discs can be readily removed without damage thereto. All keys and pins used in securing valve discs to shafts shall be stainless steel or monel. Valve discs shall be stainless steel or ductile iron, ASTM A 536, Grade 65-45-12 (448-310-12); seating edge shall be stainless steel or other corrosion resistant material.
   c. Valve shafts shall be constructed of wrought stainless steel or monel. The ends of the shaft shall be permanently marked to indicate the position of the disc on the shaft.
   d. All buried valves shall have approved manufacturer's O-ring type or split V type "Chevron" shaft seals. When O-ring seals are used, there shall be at least two O-rings in contact with the valve shaft where it penetrates the valve body.

On 24-inch (635 mm) and larger valves, the seat shall be completely replaceable and/or adjustable with common hand tools without disassembling the valve from the pipeline.

Rubber seats located on the valve disc shall be mechanically secured with stainless steel retainer rings and fasteners.

   e. Unless otherwise indicated, valves shall be provided with manual operators with vertical stems and 2 inches (50 mm) square operating nut turning clockwise to close and equipped with a valve disc position indicator. All keys or pins shall be stainless steel or monel. Buried valves shall have the valve stems extended or adjusted to locate the top of the operating nut no more than 24 inches (0.6 meter) below finish grade.
   f. Unless otherwise indicated, motorized butterfly valves shall be equipped with 230/460 volt, 3 phase reversing motor operators, extended as required to locate the center line of the operator shaft approximately 4 feet to 4 feet, 6 inches (1.2 to 1.4 meters) above finish grade. Operators shall be equipped with cast iron or malleable iron manual override hand wheel with a valve position indicator, local push button controls, lighted status/position indicator, torque and travel limit switches and all switches, relays and controls (except external power and signal wiring) necessary for both local and remote operation.

2. Performance Requirements
   a. Unless otherwise indicated, valve operators shall be sized to seat, unseat, open and close the valve with 150 psi (1 megapascal) shutoff pressure differential across the disk and
allow a flow velocity of 16 feet (4.9 meters) per second past the disc in either direction.

b. Motorized valve motors shall be capable of producing at least 140 percent of the torque required to operate the valves under conditions of maximum non-shock shutoff pressure without exceeding a permissible temperature rise of 1310°F over 1040°F ambient (55 degrees Celsius over 40 degrees Celsius ambient); they shall have a duty rating of not less than 15 minutes and shall be capable of operating the valve through 4½ cycles against full unbalanced pressure without exceeding the permissible temperature rise. Motors shall be suitable for operating the valve under maximum differential pressure when voltage to motor terminals is 80 percent of nominal voltage. Motor bearings shall be permanently lubricated and sealed.

C. Ball Valves

Ball valves shall be brass, bronze, stainless steel or PVC as indicated on the Drawings or Details or as approved by the Engineer or designated representative.

D. Air-Vacuum Release Valves

1. Valves shall be combination air-release, air-vacuum units having small and large orifice units contained and operating within a single body or assembled unit.

   The small orifice system shall automatically release small volumes of air while the pipe is operating under normal conditions. The large air-vacuum orifice system shall automatically exhaust large volumes of air while the pipe is being filled and shall permit immediate re-entry of air while being drained.

   Valves shall be rated for at least 150 psi (1 megapascal) (maximum) normal service pressure.

2. Material Requirements

   Valve exterior bodies and covers shall be cast iron or reinforced nylon.

   Internal bushings, hinge pins, float guide and retaining screws, pins, etc., shall be stainless steel, bronze, nylon, or Buna-N rubber.

   Orifice seats shall be Buna-N rubber.

   Floats shall be stainless steel, nylon, or Buna-N rubber, rated at 1,000 psi (6.9 megapascals).

   Unless otherwise indicated, these valves shall be as included in the Standard Products List (SPL WW-367 for water, WW-462 for wastewater force mains).

E. Fire Hydrants
All fire hydrants shall be Dry Barrel, Traffic Model (break-away), Post Type having Compression Type Main Valves with 5 ¼" (133 mm) opening, closing with line pressure. Approved models are listed on SPL WW-3 of the Austin Water Utility Standard Products List.

1. Applicable Specifications

AWWA C-502 current: "AWWA Standard for Dry-Barrel Fire Hydrants."

NFPA 1963: "National (American) Standard Fire Hose Coupling Screw Thread" and City of Austin 4 inch (102 mm) Fire Hose Connection Standard (Available upon request from the Austin Water Utility’s Standards Committee Chairperson at 972-0204).


2. Functional Requirements

Design Working Pressure shall be 200 psi (1.38 megapascals) and a test pressure of 400 psi (2.76 megapascals).

Inlet shall be side connection hub end for mechanical joint (ANSI A-21.11-current). Shoe shall be rigidly designed to prevent breakage.

Lower Barrel shall be rigid to assure above ground break at traffic feature. Bury length of hydrant shall be four (4) feet (1.2 meters) minimum, five (5) feet (1.5 meters) maximum (hydrant lead pipe may be elbowed up from main using restrained joints; flanged joints in lead pipes are not allowed). Flange type connections between hydrant shoe, barrel sections and bonnet shall have minimum of 6 corrosion resistant bolts.

Hydrant Main Valve shall be 5 ¼ inch (133 mm) I.D. Valve stem design shall meet requirements of AWWA C502, with Operating Nut turning clockwise to close. Operating Nut shall be pen:agonal, 1½ inch (38 mm) point to flat at base, and 1 7/16 inches (36.5 mm) at top and 1 inch (25 mm) minimum height. Seat ring shall be bronze (bronze to bronze threading), and shall be removable with lightweight stem wrench. Valve mechanisms shall be flushed with each operation of valve; there shall be a minimum of two (2) drain ports.

Traffic Feature shall have replaceable breakaway ferrous metal stem coupling held to stem by readily removable type 302 or 304 stainless steel fastenings. Breakaway flange or frangible lugs shall be designed to assure aboveground break. Breakaway or frangible bolts will not be acceptable.

Outlet Nozzles shall be located approximately 18 inches (450 mm) above ground. Each hydrant shall have two (2) 2½ inch (63.5 mm) nozzles 180 degrees apart with National (American) Standard Fire Hose Coupling Screw Thread NFPA 1963 and one (1) 4 inch (102 mm)
pumper nozzle with City of Austin standard thread-six (6) threads per inch (25 mm) "Higbee" cut, 4.8590 inch (123.4 mm) O.D., 4.6425 inch (117.9 mm) root diameter. Nozzles shall be threaded or cam-locked, O-ring sealed, and shall have type 302 or 304 stainless steel locking devices. Nozzle caps (without chains) and cap gaskets shall be furnished on the hydrant. The cap nut shall have the same configuration as the operating nut.

Hydrants shall be Dry-Top Construction, factory lubricated oil or grease with the lubricant plug readily accessible. The system shall be described for City approval.

A blue Type II-B-B reflectorized pavement marker, conforming to Standard Specification Item No. 863S, shall be placed 2 to 3 feet (0.6 to 0.9 meters) offset from the centerline of paved streets, on the side of and in line with, all newly installed fire hydrants.

Hydrant shall have double O-ring seals in a bronze stem sheath housing to assure separation of lubricant from water and shall have a weather cap or seal, or both, as approved by the Owner, to provide complete weather protection.

3. Material Requirements
All below ground bolts shall be corrosion resistant. The hydrant valve shall be Neoprene, 90 durometer minimum. The seat ring, drain ring, operating nut and nozzles shall be bronze, AWWA C-502 current, containing not over 16 percent zinc. Break-away stem coupling shall be of ferrous material; its retaining pins, bolts, nuts, etc. of type 302 or 304 stainless steel.

Coatings shall be durable and applied to clean surfaces. Exterior surfaces above ground shall receive a coating of the type and color specified in the applicable version of City of Austin SPL WW-3. The coating shall be applied according to coating manufacturer's specifications. Other exposed ferrous metal shall receive asphalt-based varnish, or approved equal, applied according to the coating manufacturer's specifications.

F. Pressure/Flow Control Valves
All control valves to regulate pressure, flow, etc., in City lines shall be models listed in the Austin Water Utility Standard Products List (SPL).

G. Drain Valves
Drain valve materials and installation shall conform to City of Austin Standard Detail No. 511S-9.

H. Valve Stem Extensions:
Valve stem extensions shall consist of a single piece of the required length with a socket on one end and a nut on the other.
PART 1  GENERAL

1.01  SECTION INCLUDES

A. Precast concrete manholes for sanitary sewers, storm sewers, and water lines. Manhole bases maybe round or square.

B. Precast concrete sanitary sewer manholes with PVC liner where corrosion resistant manholes are specifically indicated in Drawings.

C. Pile-supported concrete foundation used for unstable subgrade treatment for manhole base.

1.02  MEASUREMENT AND PAYMENT

A. Unit Prices

1. Payment for normal depth manholes, up to 8 feet deep, is on a unit price basis for each manhole installed. Manhole depth is measured from top of cover to sewer invert. Air release manhole depth is measured from top of cover to inside base for air release or vacuum release manholes. Manholes for water lines are measured from top of cover to inside base of manhole.

2. Payment for shallow depth manholes is on a unit price basis for each manhole installed. Shallow manholes have a depth of 5 feet or less measured from top of cover to sewer invert.

3. Payment for extra depth manholes is on a unit price basis per vertical foot for each foot of depth greater than 8 feet. Sewer manhole depth is measured from top of cover to sewer invert. Air release manhole depth is measured from top of cover to inside base for air release or vacuum release manholes. Manholes for water lines are measured from top of cover to inside base of manhole.

4. Payment for normal depth corrosion resistant manholes is on a unit price basis for each manhole installed.

5. Payment for standard manhole drops is on a unit price basis for each drop installed. Standard manhole drops include both internal and external drops.

6. Payment for watertight manholes, including external vent pipe is on a unit price basis for each.

7. Payment for air-release manhole with valves and fittings installed is on a unit price basis for each manhole with air-release valves and fittings installed.
8. Payment for pile-supported concrete foundation used for unstable subgrade treatment for manhole base is on a unit price basis for each foundation installed.

9. Pay estimates for partial payments will be made as measured above according to the following schedule for sanitary sewer manholes:
   a. Estimate for 90 percent payment will be authorized when the manhole is completely installed and surrounding soil backfilled
   b. Estimate for 100 percent payment will be authorized when manhole has been tested as specified in Section 02533 - Acceptance Testing for Sanitary Sewers

10. Refer to Section 01270 - Measurement and Payment for unit price procedures

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.03 REFERENCES

A. ASME B 16.1 – Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250

B. ASTM A 307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 psi Tensile Strength

C. ASTM A 615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

D. ASTM C 270 - Standard Specification for Mortar for Unit Masonry


F. ASTM C 478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections

E. ASTM C 890 - Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.


G. ASTM C 925 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals


J. ASTM C 1821 - Standard Practice for Installation of Underground Circular Precast Concrete Manhole Structures

K. ASTM C 1837 - Standard Specification for Production of Dry Cast Concrete Used for Manufacturing Pipe, Box, and Precast Structures

L. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft³ (600kN-m/m³))


N. ASTM D 2996 - Standard Specification for Filament-Wound “Fiberglass” (Glass-Fiber-Reinforced Thermosetting Resin) Pipe

O. ASTM D 2997 - Standard Specification for Centrifugally Cast “Fiberglass” (Glass-Fiber-Reinforced Thermosetting Resin) Pipe


R. AWWA C 213 - Fusion Bonded Epoxy Coatings for Steel Water Pipe and Fittings

S. American Association of State Highway and Transportation Officials (AASHTO)

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit manufacturer's data and details of following items for approval:

1. Shop drawings of manhole sections, base units and construction details, including reinforcement, jointing methods, materials and dimensions.

2. Summary of criteria used in manhole design including, as minimum, material properties, loadings, load combinations, and dimensions assumed. Include certification from manufacturer that precast manhole design is in full accordance with ASTM C 478 and/or ASTM C 890 and design criteria as established in Paragraph 2.01E of this Specification.
3. Frames, grates, rings, and covers
4. Materials to be used in fabricating drop connections
5. Materials to be used for pipe connections at manhole walls
6. Materials to be used for stubs and stub plugs, if required
7. Materials and procedures for corrosion-resistant liner and coatings, if required
8. Plugs to be used for sanitary sewer hydrostatic testing
9. Manufacturer's data for pre-mix (bag) concrete, if used for channel inverts and benches

C. Seal submittal drawings by Professional Engineer registered in State of Texas.

PART 2 PRODUCTS

2.01 PRECAST CONCRETE MANHOLES

A. Provide manhole sections, base sections, and related components conforming to ASTM C 478. Provide base riser section with integral floors, unless shown otherwise. Provide adjustment rings which are standard components of manufacturer of manhole sections. Mark date of manufacture and name or trademark of manufacturer on inside of barrel.

B. Construct barrels for precast manholes from standard reinforced concrete manhole sections of diameter indicated on Drawings. Use various lengths of manhole sections in combination to provide correct height with fewest joints. Design wall sections for depth and loading conditions in Paragraph 2.01 E, with minimum thickness of 5 inches. Base section shall have minimum thickness of 12 inches under invert.

C. Provide tops to support cast iron casting meeting AASHTO M-306 Section 5 loading, and receive manhole frame & covers, as indicated on Drawings.

D. Where manholes larger than 48-inch diameter are indicated on Drawings, provide precast base sections with flat slab top precast sections used to transition to 48-inch diameter manhole access riser sections. Transition can be concentric or eccentric unless otherwise shown on Drawings. Locate transition to provide minimum of 7-foot head clearance from base to underside of transition unless otherwise approved by Project Manager.

E. Design Loading Criteria: Manhole walls, transition slabs, cone tops, and manhole base slab shall be designed, by manufacturer, to requirements of ASTM C 478, ASTM C 890 and/or ASTM C 913 for depth as shown on Drawings and to resist following loads.

1. AASHTO HL-93 design live loading loads as referred to in AASHTO LRFD Bridge Design Specifications applied to manhole cover and transmitted down to transition and base slabs.
2. Unit soil weight of 120 pcf located above portions of manhole, including base slab projections.

3. Lateral soil pressure based on saturated soil conditions producing an at-rest equivalent fluid pressure of 100 pcf.

4. Internal liquid pressure based on unit weight of 63 pcf.

5. Dead load of manhole sections fully supported by transition and base slabs.

F. Design: Manhole walls, transition slabs, cone tops, and manhole base slab shall be designed according to requirements of ASTM C 478, ASTM C 890 and/or ASTM C 913 and following:

1. Design additional reinforcing steel to transfer stresses at openings. Area of steel to be no less than shown on Drawings.

2. Wall loading conditions:
   a. Saturated soil pressure acting on empty manhole
   b. Manhole filled with liquid to a halfway depth as measured from invert to cover, with no balancing external soil pressure

3. Minimum clear distance between two wall penetrations shall be 12 inches or half diameter of smaller penetration, whichever is greater

G. Provide joints between sections with gaskets conforming to ASTM C 443 and/or ASTM C 990.

H. When base is cast monolithic with portion of vertical section, extend reinforcing in vertical section into base.

I. Precast Concrete Base: Suitable cutouts or holes to receive pipe and connections. Lowest edge of holes or cutouts: For water line manhole, no less than 6 inches above inside surface of floor of base.

2.02 CONCRETE

A. Conform to requirements of Section 03315 - Concrete for Utility Construction or ASTM C 1837.

B. Channel Inverts: Use 5 sack premix (bag) concrete or Class A concrete for inverts not integrally foamed with manhole base, with minimum compressive strength of 4,000 psi.

C. Cement Stabilized Sand Foundation: Provide cement stabilized sand foundation under base section in lieu of foundation slab, as shown on Drawings, conforming to requirements of Section 02321 - Cement Stabilized Sand.
D. Concrete Foundation: Provide Class A concrete with minimum compressive strength of 4,000 psi for concrete foundation slab under manhole base section where indicated on Drawings.

2.03 REINFORCING STEEL

A. Conform to requirements of Section 03315 - Concrete for Utility Construction.

2.04 MORTAR

A. Conform to requirements of Section 04061 - Mortar.

2.05 MISCELLANEOUS METALS

A. Provide cast-iron frames, rings, and covers conforming to requirements of Section 02090 - Frames, Grooves, Rings and Covers.

2.06 DROP CONNECTIONS AND STUBS

A. Provide drop connections and stubs conforming to same pipe material requirements used in main pipe, unless otherwise indicated on Drawings.

2.07 PIPE CONNECTIONS TO MANHOLE

A. Sanitary Sewers

1. Provide resilient connectors conforming to requirements of ASTM C 923. Use the following materials for metallic mechanical devices as defined in ASTM C 923:
   
a. External clamps: Type 304 stainless steel

b. Internal, expandable clamps on standard manholes: Type 304 stainless steel, 11 gauge minimum.

c. Internal, expandable clamps on corrosion-resistant manholes:
   
   1) Type 316 stainless steel, 11 gauge minimum
   
   2) Type 304 stainless steel, 11 gauge minimum, coated with minimum 16 mil fusion bonded epoxy conforming to AWWA C 213

2. Where rigid joints between pipe and cast-in-place manhole base are specified or shown on Drawings, provide polyethylene-isoprene water-stop meeting physical property requirements of ASTM C 923, such as Press-Seal WS Series, or approved equal.

B. Storm Sewer Connections:

1. Provide watertight connections in accordance with ASTM C 923 and ASTM F 2510 as applicable for flexible (HDPE, PP, FRP and CMP) pipe. Rigid (concrete) pipe to
manhole connections do not have to comply with ASTM C 923 and may grouted
instead.

C. Water Lines

1. Where smooth exterior pipes, i.e., steel, ductile iron, or PVC pipes are connected to
manhole base or barrel, seal space between pipe and manhole wall with assembly
consisting of rubber gasket or links mechanically compressed to form a watertight
barrier. Assemblies: Press-Wedge, Res-Seal, Thunderline Link-Seal, or approved
equal. See Drawings for placement of assembly in manhole sections.

2. When connecting concrete or cement mortar coated steel pipes, or as option for
connecting smooth exterior pipes to manhole base or barrel, space between pipe and
manhole wall may be sealed with an assembly consisting of a stainless steel power
sleeve, stainless steel up clamp and a rubber gasket. Take-up clamp: Minimum of
9/16 inch wide. Provide PSX positive seal gasket system by Press-Seal Gasket
Corporation or approved equal.

2.08 SEALANT MATERIALS

A. Approved products in accordance with Section 01630 - Product Substitution Procedures.

B. Sealing material between precast concrete adjustment ring and manhole, between each
adjustment ring, and between adjustment ring and manhole cover frame shall be a
hydrophilic elastic sealant, which adheres to both concrete and metal, or approved equal.

C. Provide approved external sealing material from Canusa Wrap Seal manhole encapsulation
system, or approved equal.

D. Provide Butyl Sealant: Provide Press-Seal EZ Stick, or equal, for HDPE rings.

2.09 CORROSION RESISTANT MANHOLE MATERIALS

A. Where corrosion-resistant manholes are indicated on Drawings, refer to City of Houston
Approved Product List for liner and/or coating materials.

2.10 BACKFILL MATERIALS

A. Conform to requirements of Section 02317 - Excavation and Backfill for Utilities.

2.11 NON-SHRINK GROUT

A. Provide prepackaged, inorganic, flowable, non-gas-liberating, non-metallic, cement-based
gROUT requiring only addition of water.

B. Meet requirements of ASTM C 1107 and have minimum 28-day compressive strength of
7,000 psi.
2.12 VENT PIPES

A. Provide external vent pipes for manholes where indicated on Drawings.

B. Buried Vent Pipes: Provide 3-inch or 4-inch PVC DWV pipe conforming to ASTM D2665. Alternatively, provide FRP pipe as specified for vent outlet assembly.

C. Vent Outlet Assembly: Provide vent outlet assembly as shown on Drawings, constructed of following specified materials:

1. FRP Pipe: Provide filament wound FRP conforming to ASTM D 2996 or centrifugally cast FRP conforming to ASTM D 2997. Seal cut ends in accordance with manufacturer’s recommendations.

2. Joints and Fittings: Provide epoxy bodied fittings and join pipe to fittings with epoxy adhesive

3. Flanges: Provide socket-flange fittings for epoxy adhesive bonding to pipe ends where shown on Drawings. Meet bolt pattern and dimensions for ASME B 16.1, 125-pound flanges. Flange bolts shall be Type 304 stainless steel or hot-dip zinc coated, conforming to ASTM A 307, Class A or B.

4. Coating: Provide approved 2-component, aliphatic polyurethane coating using primer or tie coat recommended by manufacturer. Provide two or more coats to yield dry film thickness of at least 3 mils. Color shall be selected by Project Manager from manufacturer’s standard colors.

2.13 PROHIBITED MATERIALS

A. Do not use brick masonry for construction of manholes, including adjustment of manholes to grade. Use only specified materials listed above.

2.14 MANHOLE LADDER FOR WATERLINE MANHOLES

A. Manhole Ladder: Fiberglass with 300-lb rating at appropriate length; conform to requirements of Occupational Safety and Health Standards (OSHA), U.S. Department of Labor except where shown on Drawings:

1. Use components, including rungs, made of fiberglass, fabricated with nylon or aluminum rivets and/or epoxy. Apply non-slip coating to ladder rungs. Mount ladder using manufacturer’s recommended hardware.

2. Provide ladder as manufactured by Saf-Rail or approved equal. Locate ladder as shown on Drawings.

3. Fiberglass: Premium type polyester resin, reinforced with fiberglass; constructed to provide complete wetting of glass by resin; resistant to rot, fungi, bacterial growth and adverse effects of acids, alkalis and residential and industrial waste; yellow in
color.

B. Provide approved petroleum-based tape encapsulating bolts in access manhole.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that lines and grades are correct.

B. Determine if subgrade, when scarified and recompackted, can be compacted to 95 percent of maximum Standard Proctor Density, at ±3 percent optimum moisture content according to ASTM D 698 prior to placement of foundation material and base section. If it does not meet the moisture-density requirement, condition the subgrade until the required moisture-density requirement is met or treat as an unstable subgrade.

C. Do not build manholes in ditches, swales, or drainage paths unless approved by Project Manager.

3.02 PLACEMENT

A. Install precast manholes to conform to locations and dimensions shown on Drawings.

B. Place sanitary and storm manholes at points of change in alignment, grade, size, pipe intersections, and end of sewer unless otherwise shown on Drawings.

3.03 MANHOLE BASE SECTIONS AND FOUNDATIONS

A. Place precast base on 12 inch thick (minimum) foundation of crushed stone wrapped in filter fabric, cement stabilized sand, or concrete foundation slab. Compact cement-sand in accordance with requirements of Section 02321 - Cement Stabilized Sand.

B. Unstable Subgrade Treatment: When unstable subgrade is encountered, notify Project Manager for examination of subgrade to determine if subgrade has heaved upwards after being excavated. When heaving has not occurred, over-excavate subgrade to allow for 24-inch-thick layer of crushed stone wrapped in filter fabric as foundation material under manhole base. When there is evidence of heaving, provide pile-supported concrete foundation, as detailed on Drawings, under manhole base.

C. For manholes located over large diameter water lines, place precast base on a foundation of cement stabilized sand extending from bottom of manhole to bottom of trench. Manhole base is to be a minimum of 12-inches above water line.

3.04 PRECAST MANHOLE SECTIONS

A. Install sections, joints, and gaskets in accordance with ASTM C 1821 and the manufacturer's printed recommendations.
B. Install precast adjustment rings above tops of cones or flat-top sections as required to adjust finished elevation and to support manhole frame.

C. Seal any lifting holes with non-shrink grout.

D. Where PVC liners are required, seal joints between sections in accordance with manufacturer’s recommendations.

E. Place at least two precast concrete grade rings with thickness of 12 inches or less, under casting.

3.05 PIPE CONNECTIONS AT MANHOLES

A. Install approved resilient connectors at each pipe entering and exiting manholes in accordance with manufacturer’s instructions.

1. Where smooth exterior pipes, i.e. steel, ductile iron or PVC pipes are connected to manhole base or barrel, space between pipe and manhole wall shall be sealed with an assembly consisting of rubber gaskets or links mechanically compressed to form watertight. Assemblies: “Press-Wedge,” “Res-Seal,” “Thunderline Link-Seals,” or approved equal. See Drawings for placement of assembly in manhole sections.

2. When connecting concrete or cement mortar coated steel pipes, or as an option for connecting smooth exterior pipes to manhole base or barrel, space between pipe and manhole wall may be sealed with an assembly consisting of stainless steel power sleeve, stainless steel take-up clamp and rubber gasket. Take-up clamp: Minimum of 9/16 inch wide. Provide PSX positive seal gasket system by Press-Seal Gasket Corporation or approved equal.

B. When making a rigid (concrete) pipe connection to a concrete manhole the pipe is to be set in flexible joint sealant conforming to ASTM C 990. Grout pipe penetration in place on both inside and outside of manhole.

C. Install approved resilient connectors at each flexible (HDPE, PP, FRP CMP) pipe connection as per ASTM C 923 and/or ASTM F 2510 to a concrete manhole.

D. Ensure no concrete, cement stabilized sand, fill, or other rigid material is allowed to enter space between pipe and edge of wall opening at and around resilient connector on either interior or exterior of manhole. If necessary, fill space with compressible material to ensure full flexibility provided by resilient connector.

E. Where new manhole is constructed on existing sewer, rigid joint pipe may be used. Install waterstop gasket around existing pipe at center of cast-in-place wall. Join ends of split waterstop material at pipe springline using an adhesive recommended and supplied by waterstop manufacturer.

F. Test connection for watertight seal before backfilling.
3.06 INVERTS FOR SANITARY SEWERS

A. Construct invert channels to provide smooth flow transition waterway with no disruption of flow at pipe-manhole connections. Conform to following criteria:

1. Slope of invert bench: 1 inch per foot minimum; 1-1/2 inches per foot maximum
2. Depth of bench to invert shall be at least equal to the largest pipe diameter.
3. Invert slope through manhole: 0.10 foot drop across manhole with smooth transition of invert through manhole, unless otherwise indicated on Drawings.

B. Form invert channels with concrete if not integral with manhole base section. For direction changes of mains, construct channels tangent to mains with maximum possible radius of curvature. Provide curves for side inlets and smooth invert fillets for flow transition between pipe inverts.

3.07 DROP CONNECTIONS FOR SANITARY SEWERS

A. Backfill drop assembly with crushed stone wrapped in filter fabric, cement stabilized sand, or Class A concrete to form solid mass. Extend cement stabilized sand or concrete encasement minimum of 4 inches outside bells.

B. Install drop connection when sewer line enters manhole higher than 24 inches above invert of manhole.

3.08 INVERTS FOR STORM SEWERS

A. When precast, square or rectangular structures are used for sewer manholes, construct invert channels to provide smooth flow transition waterway with no disruption of flow at pipe-manhole connections. Conform to following criteria:

1. Slope of invert bench: 1 inch per foot minimum; 1-1/2 inches per foot maximum.
2. Depth of bench to invert: one half of largest pipe diameter.
3. Invert slope through manhole: 0.10 foot drop across manhole with smooth transition of invert through manhole, unless otherwise indicated on drawings.

B. Form invert channels with concrete, after all connections have been made

1. Use 5 sack premix (bag) concrete or Class A concrete for inverts, with minimum compressive strength of 4,000 psi.

3.09 STUBS FOR FUTURE CONNECTIONS

A. In manholes, where future connections are indicated on Drawings, install resilient connectors and pipe stubs with approved watertight plugs.
3.10 MANHOLE FRAME AND ADJUSTMENT RINGS

A. Combine precast concrete or HDPE adjustment rings so elevation of installed casting cover matches pavement surface. Seal between concrete adjustment ring and precast top section with non-shrink grout; do not use mortar between adjustment rings. Apply latex-based bonding agent to precast concrete surfaces joined with non-shrink grout. Set cast iron frame on adjustment ring in bed of approved sealant material. Install sealant bed consisting of two beads of sealant, each bead having minimum dimensions of 1/2-inch and 1/2-inch wide.

B. Wrap manhole frame and adjustment rings with external sealing material, minimum 3 inches beyond joint between ring and frame and adjustment rings and precast section.

C. For manholes in unpaved areas, set top of frame minimum of 6 inches above existing ground line unless otherwise indicated on Drawings. In unpaved areas, encase manhole frame in mortar or non-shrink grout placed flush with face of manhole ring and top edge of frame. Provide rounded corner around perimeter.

3.11 BACKFILL

A. Place and compact backfill materials in area of excavation surrounding manholes in accordance with requirements of Section 02317 - Excavation and Backfill for Utilities. Provide embedment zone backfill material, as specified for adjacent utilities, from manhole foundation up to an elevation 12 inches over each pipe connected to manhole. Provide trench zone backfill, as specified for adjacent utilities, above embedment zone backfill.

B. Where rigid joints are used for connecting existing sewers to manhole, backfill under existing sewer up to springline of pipe with Class B concrete or flowable fill.

C. In unpaved areas, provide positive drainage away from manhole frame to natural grade. Provide minimum of 4 inches of topsoil conforming to requirements of Section 02911 - Topsoil. Seed in accordance with Section 02921 - Hydro Mulch Seeding. When shown on Drawings, sod disturbed areas in accordance with Section 02922 - Sodding.

3.12 FIELD QUALITY CONTROL

A. Conduct leakage testing of sanitary sewer manholes in accordance with requirements of Section 02533 - Acceptance Testing for Sanitary Sewers.

3.13 PROTECTION

A. Protect manholes from damage until work has been accepted. Repair damage to manholes at no additional cost to City.

END OF SECTION
PART 1  GENERAL

1.01  SECTION INCLUDES

A.  Excavation, trenching, foundation, embedment, and backfill for installation of utilities, including manholes and other pipeline structures.

1.02  MEASUREMENT AND PAYMENT

A.  Unit Prices

1.  No additional payment will be made for trench excavation, embedment and backfill under this Section. Include cost in unit price for installed underground piping, sewer, conduit, or duct work.

2.  Where Project Manager directs Contractor to over excavate trench bottom, Contractor will be paid by unit price bid per linear foot under bid item - 6-inches Over Excavation of Trench Bottom.

   a.  No payment will be paid if Project Manager does not direct Contractor to over excavate trench bottom.

   b.  No over excavation will be measured or paid when unsuitable conditions result from dewatering system not in conformance with Section 01578 - Control of Ground and Surface Water.

3.  No additional payment will be made for performing Critical Location exploratory excavation. Include cost in unit price for installed underground piping, sewer, conduit, or duct work.

4.  Refer to Section 01270 - Measurement and Payment for unit price procedures.

B.  Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price

1.03  DEFINITIONS

A.  Pipe Foundation: Suitable and stable native soils that are exposed at trench subgrade after excavation to depth of bottom of bedding as shown on Drawings, or foundation backfill material placed and compacted in over-excavations.

B.  Pipe Bedding: Portion of trench backfill that extends vertically from top of foundation up to level line at bottom of pipe, and horizontally from one trench sidewall to opposite sidewall.
C. Haunching: Material placed on either side of pipe from top of bedding up to springline of pipe and horizontally from one trench sidewall to opposite sidewall.

D. Initial Backfill: Portion of trench backfill that extends vertically from springline of pipe (top of haunching) up to level line 12-inches above top of pipe, and horizontally from one trench sidewall to opposite sidewall.

E. Pipe Embedment: Portion of trench backfill that consists of bedding, haunching and initial backfill.

F. Trench Zone: Portion of trench backfill that extends vertically from top of pipe embedment up to pavement subgrade or up to final grade when not beneath pavement.

G. Unsuitable Material: Unsuitable soil materials are the following:

1. Materials that are classified as ML, CL-ML, MH, PT, OH, and OL according to ASTM D 2487.

2. Materials that cannot be compacted to required density due to gradation, plasticity, or moisture content.

3. Materials that contain large clogs, aggregates, stones greater than 4-inches in any dimension, debris, vegetation, waste or any other deleterious materials.

4. Materials that are contaminated with hydrocarbons or other chemical contaminants.

H. Suitable Material: Suitable soil materials are those meeting specification requirements. Materials mixed with lime, fly ash, or cement that can be compacted to required density and meeting requirements for suitable materials may be considered suitable materials, unless otherwise indicated.

I. Backfill: Suitable material meeting specified quality requirements placed and compacted under controlled conditions.

J. Ground Water Control Systems: Installations external to trench, such as well points, eductors, or deep wells. Ground water control includes dewatering to lower ground water, intercepting seepage which would otherwise emerge from side or bottom of trench excavation, and depressurization to prevent failure or heaving of excavation bottom. Refer to Section 01578 - Control of Ground Water and Surface Water.

K. Surface Water Control: Diversion and drainage of surface water runoff and rain water away from trench excavation. Rain water and surface water accidentally entering trench shall be controlled and removed as part of excavation drainage.

L. Excavation Drainage: Removal of surface and seepage water in trench by sump pumping and using drainage layer, as defined in ASTM D 2321, placed on foundation beneath pipe bedding or thickened bedding layer of Class I material.
M. Trench Conditions are defined with regard to stability of trench bottom and trench walls of pipe embedment zone. Maintain trench conditions that provide for effective placement and compaction of embedment material directly on or against undisturbed soils or foundation backfill, except where structural trench support is necessary.

1. Dry Stable Trench: Stable and substantially dry trench conditions exist in pipe embedment zone as result of typically dry soils or achieved by ground water control (dewatering or depressurization) for trenches extending below ground water level.

2. Stable Trench with Seepage: Stable trench in which ground water seepage is controlled by excavation drainage.
   a. Stable Trench with Seepage in Clayey Soils: Excavation drainage is provided in lieu of or to supplement ground water control systems to control seepage and provide stable trench subgrade in predominately clayey soils prior to bedding placement.
   b. Stable Wet Trench in Sandy Soils: Excavation drainage is provided in embedment zone in combination with ground water control in predominately sandy or silty soils.

3. Unstable Trench: Unstable trench conditions exist in pipe embedment zone if ground water inflow or high water content causes soil disturbances, such as sloughing, sliding, boiling, heaving or loss of density.

N. Sub-trench: Sub-trench is special case of benched excavation. Sub-trench excavation below trench shields or shoring installations may be used to allow placement and compaction of foundation or embedment materials directly against undisturbed soils. Depth of sub-trench depends upon trench stability and safety as determined by Contractor.

O. Trench Dam: Placement of low permeability material in pipe embedment zone or foundation to prohibit ground water flow along trench.

P. Over-excavation and Backfill: Excavation of subgrade soils with unsatisfactory bearing capacity or composed of otherwise unsuitable materials below top of foundation as shown on Drawings, and backfilled with foundation bedding.

Q. Foundation Bedding: Natural soil or manufactured aggregate of controlled gradation, and geotextile filter fabrics as required, to control drainage and material separation. Foundation bedding is placed and compacted as backfill to provide stable support for bedding. Foundation bedding materials may include concrete seal slabs.

R. Trench Safety Systems include both protective systems and shoring systems as defined in Section 02260 - Trench Safety Systems.

S. Trench Shield (Trench Box): Portable worker safety structure moved along trench as work proceeds, used as protective system and designed to withstand forces imposed on it by cave
in, thereby protecting persons within trench. Trench shields may be stacked if so designed or placed in series depending on depth and length of excavation to be protected.

T. Shoring System: Structure that supports sides of an excavation to maintain stable soil conditions and prevent cave-ins, or to prevent movement of ground affecting adjacent installations or improvements.

U. Special Shoring: Shoring system meeting special shoring as specified in Paragraph 1.08, Special Shoring Design Requirements, for locations identified on Drawings.

V. Vacuum Excavation: An excavation technique performed by an experienced subcontractor in which water or air jetting is used to slough off and vacuum away soil.

W. Large Diameter Water Line (LDWL): Water line that is 24-inches in diameter or larger. X. Emergency Action Plan (EAP): The EAP document should include a discussion of procedures for timely and reliable detection, classification (level of emergency) and response procedure to a potential emergency condition associated with a large diameter water line.

Y. Subsurface Utility Exploration (SUE): Non-destructive excavation, unless otherwise approved by project manager.

1.04 REFERENCES


C. ASTM C 891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures

D. ASTM C 1479 - Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations

E. ASTM C 1675 - Standard Practice for Installation of Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers

F. ASTM C 1821 - Standard Practice for Installation of Underground Circular Precast Concrete Manhole Structures


H. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft³ (600 kN-m/m³)).

I. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.

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M. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).


O. TxDOT Tex-101-E - Preparing Soil and Flexible Base Materials for Testing.

P. TxDOT Tex-110-E - Particle Size Analysis of Soils.


1.05 SCHEDULING

A. Schedule work so that pipe embedment can be completed on the same day that acceptable foundation has been achieved for each section of pipe installation, manhole, or other structures.

B. For proposed utility adjacent to or across existing LDWL:

1. Conduct a meeting between contractor, Drinking Water Operations and Utility Maintenance Branch prior to beginning excavation to coordinate the EAP in the event a water line shut down becomes necessary.

2. Notify Drinking Water Operations a minimum of 1 week prior to beginning construction activities.

3. Notify Drinking Water Operations a minimum of 48 hours prior to beginning SUE work near LDWL.

4. Unless otherwise approved by City Engineer, perform construction activities between 7 AM and 7 PM, Monday through Friday. No work permitted around a LDWL on weekends or City Holiday.

5. A City Inspector must be present during SUE or construction activities occurring within four feet or one diameter of the LDWL, whichever is greater, from a LDWL or appurtenance.
1.06 SUBMITTALS

A.
Conform to requirements of Section 01330 - Submittal Procedures.

B.
Submit planned typical method of excavation, backfill placement and compaction including:

1. Trench widths.

2. Procedures for foundation and pipe zone bedding placement, and trench backfill compaction.

3. Procedures for assuring compaction against undisturbed soil when pre-manufactured trench safety systems are proposed.

C.
Submit backfill material sources and product quality information in accordance with requirements of Section 02320 - Utility Backfill Materials.

D.
Submit trench excavation safety program in accordance with requirements of Section 02260 - Trench Safety System. Include designs for special shoring meeting requirements defined in Paragraph 1.08, Special Shoring Design Requirements contained herein.

E.
Submit record of location of utilities as installed, referenced to survey control points. Include locations of utilities encountered or rerouted. Give stations, horizontal dimensions, elevations, invert, and gradients.

F.
Submit 11-inch by 17-inch or 12-inch by 18-inch copy of Drawing with plotted utility or obstruction location titled "Critical Location Report" to Project Manager.

G.
For installation of proposed utility adjacent to or across existing LDWL, prepare and submit the following to Drinking Water Operations prior to beginning construction activities. Obtain approval from Drinking Water Operations prior to commencing prelocate or utility work near LDWL.

1. Trench details, shoring system designs, installation sequences, and flowable fill mix designs.

2. Emergency Action Plan (EAP) to address contingency plans in the event of damage to or failure of LDWL. Include the following:
   a. Contact personnel and agencies including primary and secondary telephone numbers.
   b. Contractor’s hierarchy of responsible personnel.
   c. Traffic control measures.
   d. Identification of resources to be available on or near project site in event of damage to or failure of LDWL.
1.07 TESTS

A. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by City in accordance with requirements of Section 01454 - Testing Laboratory Services and as specified in this Section.

B. Perform backfill material source qualification testing in accordance with requirements of Section 02320 - Utility Backfill Materials.

1.08 SPECIAL SHORING DESIGN REQUIREMENTS

A. Have special shoring designed or selected by Contractor's Professional Engineer to provide support for sides of excavations, including soils and hydrostatic ground water pressures as applicable, and to prevent ground movements affecting adjacent installations or improvements such as structures, pavements and utilities. Special shoring may be a premanufactured system selected by Contractor's Professional Engineer to meet project site requirements based on manufacturer's standard design.

PART 2 PRODUCTS

2.01 EQUIPMENT

A. Perform excavation with hydraulic excavator or other equipment suitable for achieving requirements of this Section.

B. Use only hand-operated tamping equipment until minimum cover of 12-inches is obtained over pipes, conduits, and ducts. Do not use heavy compacting equipment until adequate cover is attained to prevent damage to pipes, conduits, or ducts.

C. Use trench shields or other protective systems or shoring systems which are designed and operated to achieve placement and compaction of backfill directly against undisturbed native soil.

D. Use special shoring systems where required which may consist of braced sheeting, braced soldier piles and lagging, slide rail systems, or other systems meeting requirements as specified in Paragraph 1.08, Special Shoring Design Requirements.

2.02 MATERIAL CLASSIFICATIONS

A. Embedment and Trench Zone Backfill Materials: Conform to classifications and product descriptions of Section 02320 - Utility Backfill Materials and Section 02321 – Cement Stabilized Sand.

B. Concrete Backfill: Conform to requirements for Class B concrete as specified in Section 03315 - Concrete for Utility Construction.

C. Geotextile (Filter Fabric): Conform to requirements of Section 02621 Geotextile.
D. Concrete for Trench Dams: Concrete backfill or 3 sack premixed (bag) concrete.

PART 3 EXECUTION

3.01 STANDARD PRACTICE

A. Install flexible pipe, including "semi-rigid" pipe, to conform to standard practice described in ASTM D 2321, and as described in this Section. Where an apparent conflict occurs between standard practice and requirements of this Section, this Section governs.

B. Install rigid pipe to conform to standard practice described in ASTM C 12, C 1479, or C 1675 as applicable, and as described in this Section. Where an apparent conflict occurs between standard practice and requirements of this Section, this Section governs.

3.02 PREPARATION

A. Establish traffic control to conform to requirements of Section 01555 - Traffic Control and Regulation. Maintain barricades and warning lights for streets and intersections affected by work, and are considered hazardous to traffic movements.

B. Perform work to conform to applicable safety standards and regulations. Employ trench safety system as specified in Section 02260 - Trench Safety Systems.

C. Immediately notify agency or company owning any existing utility line which is damaged, broken, or disturbed. Obtain approval from Project Manager and agency for any repairs or relocations, either temporary or permanent.

D. Remove existing pavements and structures, including sidewalks and driveways, to conform to requirements of Section 02221 - Removing Existing Pavements, Structures, Wood and Demolition Debris, as applicable.

E. Install and operate necessary dewatering and surface-water control measures to conform to Section 01578 - Control of Ground and Surface Water. Provide stable trench to allow installation in accordance with Specifications.

F. Maintain permanent benchmarks, monumentation, and other reference points. Unless otherwise directed in writing, replace those which are damaged or destroyed in accordance with Section 01725 - Field Surveying.

3.03 CRITICAL LOCATION INVESTIGATION

A. Horizontal and vertical location of various underground lines shown on Drawings, including but not limited to water lines, gas lines, storm sewers, sanitary sewers, telecommunication lines, electric lines or power ducts, pipelines, concrete and debris, are based on best information available but are only approximate locations. Unless otherwise approved by Project Manager, at Critical Locations shown on Drawings, perform vacuum excavation to field verify horizontal and vertical locations of such lines within a zone 2 feet vertically and 4
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feet horizontally of proposed work exclude water jetting at PCCP water line.

1. Verify location of existing utilities minimum of 7 working days in advance of pipe laying activities based on daily pipe laying rate or prior to beginning installation of auger pit or tunnel shaft. Use extreme caution and care when uncovering utilities designated by Critical Locate.

2. Notify Project Manager in writing immediately upon identification of obstruction. In event of failure to identify obstruction in minimum of 7 days, Contractor will not be entitled to extra cost for downtime including, but not limited to, payroll, equipment, overhead, demobilization and remobilization, until 7 days has passed from time Project Manager is notified of obstruction.

B. Notify involved utility companies of date and time that investigation excavation will occur and request that their respective utility lines be marked in field. Comply with utility or pipeline company requirements that their representative be present during excavation. Provide Project Manager with 48 hours notice prior to field excavation or related work.

C. Survey vertical and horizontal locations of obstructions relative to project baseline and datum and plot on 12-inch by 18-inch copy of Drawings. For large diameter water lines, submit to Project Manager for approval, horizontal and vertical alignment dimensions for connections to existing lines, tied into project baseline, signed and sealed by R.P.L.S.

D. LDWL Prelocate Requirements:

1. Field-locate LDWL, appurtenances and laterals connected directly to LDWL through use of non-probing method such as a vacuum truck (non-water jetting method) at no greater than 50-foot intervals. Locate upstream and downstream of proposed work or utility installation.

2. Record crown and side of LDWL adjacent to proposed work or utility installation. Record LDWL locations horizontally and vertically using same coordinate system employed on proposed utility drawings.

3. Tie horizontal and vertical coordinates into project baseline. Submit recordings performed by R.P.L.S to City a minimum of 14 days prior to mobilizing to site.

3.04 PROTECTION

A. Protect trees, shrubs, lawns, existing structures, and other permanent objects outside of grading limits and within grading limits as designated on Drawings, and in accordance with requirements of Section 01562 - Tree and Plant Protection.

B. Protect and support above-grade and below-grade utilities which are to remain.

C. Restore damaged permanent facilities to pre-construction conditions unless replacement or abandonment of facilities is indicated on Drawings.

D. Take measures to minimize erosion of trenches. Do not allow water to pond in trenches.

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Where slides, washouts, settlements, or areas with loss of density or pavement failures or potholes occur, repair, re-compact, and pave those areas at no additional cost to City.

E. Contingency plans for proposed work or utility installation adjacent to or across a LDWL:

1. Conduct on-site emergency drill prior to commencing proposed utility installation, and at three month intervals to assure EAP is current.

2. In the event a LDWL shut down becomes necessary, secure site and provide assistance to City personnel to access pipe and isolation valves as needed.

3.05 EXCAVATION

A. Except as otherwise specified or shown on Drawings, install underground utilities in open cut trenches with vertical sides.

B. Perform excavation work so that pipe, conduit, and ducts can be installed to depths and alignments shown on Drawings. Avoid disturbing surrounding ground and existing facilities and improvements.

C. Determine trench excavation widths using following schedule as related to pipe outside diameter (O.D.). Excavate trench so that pipe is centered in trench.

<table>
<thead>
<tr>
<th>Nominal Pipe Size, Inches</th>
<th>Minimum Trench Width, Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 18</td>
<td>O.D. + 18</td>
</tr>
<tr>
<td>18 to 30</td>
<td>O.D. + 24</td>
</tr>
<tr>
<td>36 to 42</td>
<td>O.D. + 36</td>
</tr>
<tr>
<td>Greater than 42</td>
<td>O.D. + 48</td>
</tr>
</tbody>
</table>

Do not obstruct sight distance for vehicles utilizing roadway or detours with stockpiled materials.

D. Use sufficient trench width or benches above embedment zone for installation of well point headers or manifolds and pumps where depth of trench makes it uneconomical or impractical to pump from surface elevation. Provide sufficient space between shoring cross braces to permit equipment operations and handling of forms, pipe, embedment and backfill, and other materials.

E. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work at that location. Notify Project Manager and obtain instructions before proceeding.

F. Shoring of Trench Walls.

1. Install Special Shoring in advance of trench excavation or simultaneously with trench excavation, so that soils within full height of trench excavation walls will remain laterally supported at all times.
2. For all types of shoring, support trench walls in pipe embedment zone throughout installation. Provide trench wall supports sufficiently tight to prevent washing trench wall soil out from behind trench wall support.

3. Leave sheeting driven into or below pipe embedment zone in place to preclude loss of support of foundation and embedment materials, unless otherwise directed by Project Manager. Leave rangers, walers, and braces in place as long as required to support sheeting, which has been cut off, and trench wall in vicinity of pipe zone.

4. Employ special methods for maintaining integrity of embedment or foundation material. Before moving supports, place and compact embedment to sufficient depths to provide protection of pipe and stability of trench walls. As supports are moved, finish placing and compacting embedment.

5. If sheeting or other shoring is used below top of pipe embedment zone, do not disturb pipe foundation and embedment materials by subsequent removal. Maximum thickness of removable sheeting extending into embedment zone shall be equivalent of 1-inch-thick steel plate. As sheeting is removed, fill in voids left with grouting material.

G. Use of Trench Shields. When trench shield (trench box) is used as worker safety device, the following requirements apply:

1. Make trench excavations of sufficient width to allow shield to be lifted or pulled freely, without damage to trench sidewalls.

2. Move trench shields so that pipe, and backfill materials, after placement and compaction, are not damaged nor disturbed, nor degree of compaction reduced. Recompact after shield is moved if soil is disturbed.

3. When required, place, spread, and compact pipe foundation and bedding materials beneath shield. For backfill above bedding, lift shield as each layer of backfill is placed and spread. Place and compact backfill materials against undisturbed trench walls and foundation.

4. Maintain trench shield in position to allow sampling and testing to be performed in safe manner.

5. Conform to applicable Government regulations.

H. Voids under paving area outside shield caused by Contractor's work will require removal of pavement, consolidation and replacement of pavement in accordance with Contract Documents. Repair damage resulting from failure to provide adequate supports.

I. Place sand or soil behind shoring or trench shield to prevent soil outside shoring from collapsing and causing voids under pavement. Immediately pack suitable material in outside voids following excavation to avoid caving of trench walls.
J. Coordinate excavation within 15 feet of pipeline with company's representative. Support pipeline with methods agreed to by pipeline company's representative. Use small, rubber-tired excavator, such as backhoe, to do exploratory excavation. Bucket that is used to dig in close proximity to pipelines shall not have teeth or shall have guard installed over teeth to approximate bucket without teeth. Excavate by hand within 1 foot of Pipeline Company's line. Do not use larger excavation equipment than normally used to dig trench in vicinity of pipeline until pipelines have been uncovered and fully exposed. Do not place large excavation and hauling equipment directly over pipelines unless approved by Pipeline Company's representative.

K. When, during excavation to uncover pipeline company's pipelines, screwed collar or an oxy-acetylene weld is exposed, immediately notify Project Manager. Provide supports for collar or welds. Discuss with Pipeline Company's representative and determine methods of supporting collar or weld during excavation and later backfilling operations. When collar is exposed, request Pipeline Company to provide welder in a timely manner to weld ends of collar prior to backfilling of excavation.

L. Excavation and shoring requirements for proposed work or utility installation adjacent to or across a LDWL:

1. Identify LDWL area in field and barricade off from construction activities. Allow no construction related activities including, but not limited to, loading of dump trucks and material staging or storage, on top of LDWL.

2. Employ a groundwater control system when performing excavation activities within ten feet of LDWL to:
   a. Effectively reduce hydrostatic pressure affecting excavations,
   b. Develop substantially dry and stable subgrade for subsequent construction operations,
   c. Prevent loss of fines, seepage, boils, quick condition or softening of foundation strata, and
   d. Maintain stability of sides and bottom of excavations.

3. When edge of proposed trench or shoring is within a distance equal to one diameter of LDWL from outside of wall of LDWL, valve or appurtenance:
   a. Maintain minimum of four (4) feet horizontal clearance and minimum of two (2) feet vertical clearance between proposed utility and LDWL.
   b. Auger Construction
      1) Maintain minimum of four (4) feet horizontal clearance between proposed utility and LDWL.
      2) Dry auger method required when auger hole is 12-inches and larger in
d. Open Cut Construction and Auger pits

1) Perform hand excavation when within four (4) feet of LDWL.

2) Employ hydraulic or pneumatic shoring system. Do not use vibratory or impact driven shoring or piling.

3) Expose no more than 30-feet of trench prior to backfilling.

4) A maximum of one (1) foot of vertical trench shall be un-braced at a time to maintain constant pressure on face of excavated soil.

5) Upon removal of shoring system, inject flowable fill into void space left behind by shoring system. Comply with Standard Specification 02322 - Flowable Fill.

When edge of utility excavation is greater than one diameter of LDWL from outside wall of LDWL, use a shielding system as required by Project Manager and proposed utility standards and practices.

3.06 HANDLING EXCAVATED MATERIALS

A. Use only excavated materials, which are suitable as defined in this Section and conforming to Section 02320 - Utility Backfill Materials. Place material suitable for backfilling in stockpiles at distance from trench to prevent slides or cave-ins.

B. When required, provide additional backfill material conforming to requirements of Section 02320 - Utility Backfill Materials.

C. Do not place stockpiles of excess excavated materials on streets and adjacent properties. Protect backfill material to be used on site. Maintain site conditions in accordance with Section 01504 - Temporary Facilities and Controls. Excavate trench so that pipe is centered in trench. Do not obstruct sight distance for vehicles utilizing roadway or detours with stockpiled materials.

3.07 TRENCH FOUNDATION

A. Excavate bottom of trench to uniform grade to achieve stable trench conditions and satisfactory compaction of foundation or bedding materials.

B. When wet soil is encountered on trench bottom and dewatering system is not required, over excavate an additional 6-inches with approval by Project Manager. Place non-woven geotextile fabric and then compact 12-inches of crushed stone in one lift on top of fabric. Compact crushed stone with four passes of vibratory-type compaction equipment.

C. Perform over excavation, when directed by Project Manager, in accordance with Paragraph 02317-13
3.07.B above. Removal of unstable or unsuitable material may be required if approved by Project Manager;

1. Even though Contractor has not determined material to be unsuitable, or

2. If unstable trench bottom is encountered and an adequate ground water control system is installed and operating according to Section 01578 - Control of Ground and Surface Water.

D. Place trench dams in Class I foundations in line segments longer than 100 feet between manholes and not less than one in every 500 feet of pipe placed. Install additional dams as needed to achieve workable construction conditions. Do not place trench dams closer than 5 feet from manholes.

3.08 PIPE EMBEDMENT, PLACEMENT, AND COMPACTION

A. Remove loose, sloughing, caving, or otherwise unsuitable soil from bottoms and sidewalls of trenches immediately prior to placement of embedment materials.

B. Place embedment including bedding, haunching, and initial backfill as shown on Drawings.

C. For pipe installation, manually spread embedment materials around pipe to provide uniform bearing and side support when compacted. Protect flexible pipe from damage during placing of pipe zone bedding material. Perform placement and compaction directly against undisturbed soils in trench sidewalls, or against sheeting which is to remain in place.

D. Do not place trench shields or shoring within height of embedment zone unless means to maintain density of compacted embedment material are used. If moveable supports are used in embedment zone, lift supports incrementally to allow placement and compaction of material against undisturbed soil.

E. Place geotextile to prevent particle migration from in-situ soil into open-graded (Class I) embedment materials or drainage layers.

F. Do not damage coatings or wrappings of pipes during backfilling and compacting operations. When embedding coated or wrapped pipes, do not use crushed stone or other sharp, angular aggregates.

G. Place haunching material manually around pipe and compact it to provide uniform bearing and side support. If necessary, hold small-diameter or lightweight pipe in place during compaction of haunch areas and placement beside pipe with sand bags or other suitable means.

H. Place electrical conduit, if used, directly on foundation without bedding.

I. Shovel in-place and compact embedment material using pneumatic tampers in restricted areas, and vibratory-plate compactors or engine-powered jumping jacks in unrestricted areas. Compact each lift before proceeding with placement of next lift. Water tamping is not
allowed.

J. For water lines construction embedment, use bank run sand, concrete sand, gem sand, pea gravel, or crushed limestone as specified in Section 02320 - Utility Backfill Material. Adhere to the following subparagraph numbers 1 and 2.

1. Class I, II and III Embedment Materials:
   a. Maximum 6-inches compacted lift thickness.
   b. Compact to achieve minimum of 95 percent of maximum dry density as determined according to ASTM D 698.
   c. Moisture content to be within -3 percent to +5 percent of optimum as determined according to ASTM D 698, unless otherwise approved by Project Manager.

2. Cement Stabilized Sand (where required for special installations):
   a. Maximum 6-inches compacted thickness.
   b. Compact to achieve minimum of 95 percent of maximum dry density as determined according to ASTM D 698.
   c. Moisture content to be on dry side of optimum as determined according to ASTM D 698 but sufficient for effective hydration.

K. For Sanitary Sewers adhere to subparagraph number 1 and 2. For Storm Sewers provide cement stabilized sand per paragraph 2. This provision does not apply to Storm Sewers constructed of HDPE pipe installed under pavement.

1. Class I Embedment Materials.
   a. Maximum 6-inches compacted lift thickness.
   b. Systematic compaction by at least two passes of vibrating equipment. Increase compaction effort as necessary to effectively embed pipe to meet deflection test criteria.
   c. Moisture content as determined by Contractor for effective compaction without softening soil of trench bottom, foundation or trench walls.

2. Class II Embedment and Cement Stabilized Sand.
   a. Maximum 6-inches compacted thickness.
   b. Compaction by methods determined by Contractor to achieve minimum of 95 percent of maximum dry density as determined according to ASTM D 698 for
Class II materials and according to ASTM D 558 for cement stabilized materials.

c. Moisture content of Class II materials within 3 percent of optimum as determined according to ASTM D 698. Moisture content of cement stabilized sands on dry side of optimum as determined according to ASTM D 558 but sufficient for effective hydration.

L. For Storm Sewers constructed of any flexible pipe product and installed under pavement provide flowable fill pipe embedment as specified in Section 02322 - Flowable Fill.

M. Place trench dams in Class I embedment in line segments longer than 100 feet between manholes, and not less than one in every 500 feet of pipe placed. Install additional dams as needed to achieve workable construction conditions. Do not place trench dams closer than 5 feet from manholes.

3.09 TRENCH ZONE BACKFILL PLACEMENT AND COMPACTION

A. Place backfill for pipe or conduits and restore surface as soon as practicable. Leave only minimum length of trench open as necessary for construction.

B. For water lines, under pavement and to within one foot back of curb, use backfill materials described below:

1. For water lines 20-inches in diameter and smaller, use bank run sand or select backfill materials up to pavement base or subgrade.

2. For water lines 24-inches in diameter and larger, backfill with suitable on-site material (random backfill) up to 12-inches below pavement base or subgrade. Place minimum of 12-inches of select backfill below pavement base or subgrade.

C. For sewer pipes (Storm and Sanitary), use backfill materials described by trench limits. For "trench zone backfill" under pavement and to within one foot back of curb, use cement stabilized sand for pipes of nominal sizes 36-inches in diameter and smaller to level 12 inches below the pavement. For sewer pipes 42-inches in diameter and larger, under pavement or natural ground, backfill from 12-inches above top of pipe to 120 inches below pavement with suitable on-site material or select backfill. Use select backfill for rigid pavements or flexible base material for asphalt pavements for 12-inch backfill directly under pavement. For backfill materials reference Section 02320 - Utility Backfill Materials. This provision does not apply where a Storm Sewer is constructed of any flexible pipe product.

D. For Storm Sewers constructed of any flexible pipe product and installed under pavement provide flowable fill as specified in Section 02322 - Flowable Fill. For Storm Sewers constructed of any flexible pipe product and not installed under pavement provide cement stabilized sand.

E. Where damage to completed pipe installation work is likely to result from withdrawal of sheeting, leave sheeting in place. Cut off sheeting 1.5-feet or more above crown of pipe.
sheeting, leave sheeting in place. Cut off sheeting 1.5-feet or more above crown of pipe. Remove trench supports within 5-feet from ground surface.

F. Unless otherwise shown on Drawings. Use one of the following trench zone backfills under pavement and to within one foot of edge of pavement. Place trench zone backfill in lifts and compact. Fully compact each lift before placement of next lift.

1. Class I, II, or III or combination thereof:
   a. Place in maximum 12-inch thick loose layers.
   b. Compact by vibratory equipment to minimum of 95 percent of maximum dry density determined according to ASTM D 698.
   c. Moisture content within zero percent to 5 percent above optimum determined according to ASTM D 698, unless otherwise approved by Project Manager.

2. Cement-Stabilized Sand:
   a. Maximum lift thickness determined by Contractor to achieve uniform placement and required compaction, but do not exceed 12-inches.
   b. Compact by vibratory equipment to minimum of 95 percent of maximum dry density determined according to ASTM D 558.
   c. Moisture content on dry side of optimum determined according to ASTM D 558 but sufficient for cement hydration.

3. Class IVA and IVB (Clay Soils):
   a. Place in maximum 8-inch thick loose lifts.
   b. Compaction by vibratory Sheepfoot roller to minimum of 95 percent of maximum dry density determined according to ASTM D 698.
   c. Moisture content within zero percent to 5 percent above optimum determined according to ASTM D 698, unless approved by Project Manager.

G. Unless otherwise shown on Drawings, for trench excavations not under pavement, random backfill of suitable material may be used in trench zone. This provision does not apply to flexible pipe used for storm sewers.

1. Fat clays (CH) may be used as trench zone backfill outside paved areas at Contractor's option. When required density is not achieved, at any additional cost to City, rework, dry out, use lime stabilization or other approved methods to achieve compaction requirements, or use different suitable material.

2. Maximum 9-inch compacted lift thickness for clayey soils and maximum 12-inch lift
thickness for granular soils.

3. Compact to minimum of 90 percent of maximum dry density determined according to ASTM D 698.

4. Moisture content as necessary to achieve density.

H. For electric conduits, remove form work used for construction of conduits before placing trench zone backfill.

3.10 MANHOLES, JUNCTION BOXES AND OTHER PIPELINE STRUCTURES

A. Below paved areas or where shown on Drawings, encapsulate manhole with cement stabilized sand; minimum of 2 foot below base, minimum 2 foot around walls, up to pavement subgrade or natural ground. Compact in accordance with Paragraph 3.09.F.2 of this Section

B. In unpaved areas, use select fill for backfill. Existing material that qualifies as select material may be used, unless indicated otherwise on Drawings. Deposit backfill in uniform layers and compact each layer as specified. Maintain backfill material at no less than 2 percent below nor more than 5 percent above optimum moisture content, unless otherwise approved by Project Manager. Place fill material in uniform 8-inch maximum loose layers. Compact fill to at least 95 percent of maximum Standard Proctor Density according to ASTM D 698.

C. For LDWL projects, encapsulate manhole with cement stabilized sand; minimum of 1 foot below base, minimum of 2 feet around walls, up to within 12-inches of pavement subgrade or natural ground. For manholes over water line, extend encapsulation to bottom of trench. Compact in accordance with Paragraph 3.09.F.2 of this Section.

3.11 FIELD QUALITY CONTROL

A. Test for material source qualifications as defined in Section 02320 - Utility Backfill Materials.

B. Provide excavation and trench safety systems at locations and to depths required for testing and retesting during construction at no additional cost to City.

C. Tests will be performed on minimum of three different samples of each material type for plasticity characteristics, in accordance with ASTM D 4318, and for gradation characteristics, in accordance with Tex-101-E and Tex-110-E. Additional classification tests will be performed whenever there is noticeable change in material gradation or plasticity, or when requested by Project Manager.

D. At least three tests for moisture-density relationships will be performed initially for backfill materials in accordance with ASTM D 698, and for cement-stabilized sand in accordance with ASTM D 558. Perform additional moisture-density relationship tests once a month or whenever there is noticeable change in material gradation or plasticity.
E. In-place density tests of compacted pipe foundation, embedment and trench zone backfill soil materials will be performed according to ASTM D 1556, or ASTM D 2922 and ASTM D 3017, and at following frequencies and conditions.

1. For open cut construction projects and auger pits: Unless otherwise approved by Project Manager, successful compaction to be measured by one test per 40 linear feet measured along pipe for compacted embedment and two tests per 40 linear feet measured along pipe for compacted trench zone backfill material. Length of auger pits to be measured to arrive at 40 linear feet.

2. A minimum of three density tests for each full shift of Work.

3. Density tests will be distributed among placement areas. Placement areas are: foundation, outer bedding, haunching, initial backfill and trench zone.

4. The number of tests will be increased if inspection determines that soil type or moisture content are not uniform or if compacting effort is variable and not considered sufficient to attain uniform density, as specified.

5. Density tests may be performed at various depths below fill surface by pit excavation. Material in previously placed lifts may therefore be subject to acceptance/rejection.

6. Two verification tests will be performed adjacent to in-place tests showing density less than acceptance criteria. Placement will be rejected unless both verification tests show acceptable results.

7. Recompacted placement will be retested at same frequency as first test series, including verification tests.

8. Identify elevation of test with respect to natural ground or pavement.

F. Recondition, re-compact, and retest at Contractor’s expense if tests indicate Work does not meet specified compaction requirements. For hardened soil cement with nonconforming density, core and test for compressive strength at Contractor’s expense.

G. Acceptability of crushed rock compaction will be determined by inspection.

3.12 DISPOSAL OF EXCESS MATERIAL

A. Dispose of excess materials in accordance with requirements of Section 01576 - Waste Material Disposal.

END OF SECTION
PART I  GENERAL

1.01  SECTION INCLUDES

A.  Ductile iron pipe and fittings for water lines, wastewater force mains, gravity sanitary sewers, and storm sewers.

1.02  MEASUREMENT AND PAYMENT

A.  Unit Prices.

1.  No separate payment will be made for ductile iron pipe and fittings under this Section, with the exception of extra fittings in place. Include cost in unit prices for work as specified in the following Sections, as applicable:

a.  Section 02511 - Water lines
b.  Section 02531 - Gravity Sanitary Sewers
c.  Section 02532 - Sanitary Sewage Force Mains
d.  Section 02631 - Storm Sewers

2.  Refer to Section 01270 - Measurement and Payment for unit price procedures.

B.  Extra Ductile Iron Compact Fittings in Place shall be for additional fittings required to complete job. This is not to exclude extension of pipe across driveway or intersection for purpose of terminating line in more advantageous position. This determination shall be at discretion of Project Manager. This bid item includes additional fittings as may be necessary to complete job in conformance with intent of Drawings.

C.  Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.03  REFERENCES


through 48-in.


G. ANSI A 21.51 (AWWA C 151) - Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water and Other Liquids.

H. ANSI A 21.53 (AWWA C 153) - Standard for Ductile Iron Compact Fittings, 3 inches through 24 inches and 54 inches through 64 inches for Water Service.


L. ASTM F 477 - Elastomeric Seals (gaskets) for Joining Plastic Pipe.


N. AWWA C 105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.

O. AWWA C 300 - Standard for Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, for Water and other Liquids.

P. AWWA C 600 - Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

Q. SSPC-SP 6 - Steel Structures Painting Council, Commercial Blast Cleaning.


S. American Association of State Highway Transportation Officials (AASHTO).
1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. For pipes 16 inches and greater submit shop drawings signed and sealed by Professional Engineer registered in State of Texas showing the following:

1. Manufacturer's pipe design calculations.

2. Provide lay schedule of pictorial nature indicating alignment and grade, laying dimensions, fitting, flange, and special details, with plan view of each pipe segment sketched, detailing pipe invert elevations, horizontal bends, restrained joints, and other critical features. Indicate station numbers for pipe and fittings corresponding to Drawings. Do not start production of pipe and fittings prior to review and approval by Project Manager. Provide final approved lay schedule on CD-ROM in Adobe portable document format (*.PDF).


4. Class and length of joint.

C. Submit manufacturer's certifications that ductile iron pipe and fittings meet provisions of this Section and have been hydrostatically tested at factory and meet requirements of ANSI A 21.51.

D. Submit certifications that pipe joints have been tested and meet requirements of ANSI A 21.11.

E. Submit affidavit of compliance in accordance with ANSI A21.16 for fittings with fusion bonded epoxy coatings or linings.

PART 2 PRODUCTS

2.01 DUCTILE IRON PIPE

A. Ductile Iron Pipe Barrels: Shall conform to AWWA C115, C150 and C151 and bear mark of Underwriters’ Laboratories approval. Provide minimum thickness Class 52 for sanitary sewers. Unless otherwise shown on Drawings, use a minimum Pressure Class 250 for water lines less than or equal to 20-inch diameter. For 24-inch and larger, design for project specific hydraulics as per AWWA C150. Use minimum Pressure Class 350 for water lines in casing or trenchless construction and for flanged pipe.

B. Provide pipe sections in standard lengths, not less than 18 feet long, except for special fittings and closure sections as indicated on shop drawings.

C. For 24-inch and larger water lines, furnish and install cathodic protection in accordance with
Section 16640 - Cathodic Protection for Pipelines.

D. For sanitary sewer lines, modify pipe for cathodic protection in accordance with Section 16640 - Cathodic Protection for Pipelines. In lieu of furnishing ductile iron pipe with cathodic protection system, furnish ductile iron pipe with polyethylene encasement, provided the following criteria is met:

1. Provide minimum thickness class.

2. Provide polyethylene encasement material and installation in accordance with AWWA C105, and backfill as specified. Minimum of two complete wraps of 8-mil-thick polyethylene.

3. Use polyethylene encasement for open cut installations only. For augered sections or sections installed inside a casing, provide coating in accordance with paragraph 2.05 D.1.

4. Adhere to other requirements specified herein (e.g., insulation kits, etc.).

E. For use of pressure class pipe for water lines, design pipe and fittings to withstand most critical simultaneous application of external loads and internal pressures. Base design on minimum of AASHTO HS-20 loading, AREMA E-80 loads and depths of bury as indicated on Drawings. Design pipes with Marston's earth loads for a transition width trench for zero to 16 feet of cover. Use Marston's earth loads for a trench width of O.D. (of pipe) + 4 feet for pipe greater than 16 feet of cover. Use Marston's equations for a trench condition in both open-cut and tunnel applications. Design for most critical groundwater level condition. Pipe design conditions:

1. Working pressure = 150 psi.

2. Hydrostatic field test pressure = 150 psi.

3. Maximum pressure due to surge = 225 psi.

4. Minimum Pressure due to surge = -10 psi.

5. Design tensile stress due to surge or hydrostatic test pressure: No greater than 50% minimum yield.

6. Design bending stress due to combined earth loads and surge or hydrostatic test pressure: No greater than 48,000 psi.

7. Unit weight of fill 2' 120 pcf.

8. Deflection lag factor (Dl) = 1.2.

02501-4
9. Bedding constant \((K) = 0.1\).

10. Moment coefficient = 0.16.

11. Fully saturated soil conditions \(h_w = h = \) depth of cover above top of pipe.

F. Hydrostatic Test of Pipe: AWWA C 151, Section 5.2.1, at point of manufacture. Hold test for a minimum 2 minutes for thorough inspection of pipe. Repair or reject pipe revealing leaks or cracks.

G. Pipe Manufacturer for large diameter water lines: Minimum of 5 years of successful pipe installations in continuous service. Manufacturer must maintain on site or in plant enough fittings to satisfy the following requirements:

<table>
<thead>
<tr>
<th>Line Diameter</th>
<th>Required Bends*</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 and 24 inches</td>
<td>Four 45° bends per 5,000 LF of water line</td>
</tr>
<tr>
<td>&gt; 24 inches</td>
<td>Four 22.5° bends per 10,000 LF of water line</td>
</tr>
</tbody>
</table>

*Based on total length of contract (minimum of four). Any combination of bends may be substituted at manufacturer's option (i.e. two 22.5° bends are equivalent to one 45° bend) and will be counted as one fitting.

Manufacturer or supplier must be capable of delivering bends to job site within 12 hours of notification. Use fittings at direction of Project Manager where unforeseen obstacles are encountered during construction. These fittings are in addition to any fittings called out in construction documents and must be available at all times.

H. Provide flange adapter with insulating kit as required when connecting new piping to existing piping and piping of different materials, unless otherwise approved by Project Manager.

I. Clearly mark pipe section to show location and thickness/pressure class color coded.

J. No welding will be permitted on Ductile Iron Pipe except at restrained joint spigots or fittings as per ANSI/AWS D11.2. No field welding is allowed.

2.02 JOINTS

A. Joint Types: ANSI A 21.11 push-on; ANSI A 21.11 mechanical joint; or ANSI A 21.16 flanged end. Provide push-on joints unless otherwise indicated on the Drawings or required by these specifications. For sanitary sewer lines with bolted joints, conform to requirements of AWWA C111; provide minimum 304 stainless steel for restraint joints. For water lines with bolted joints, conform to requirements of AWWA C111; provide Denso or approved...
equal petrolatum based tape coating system for exposed portion of nuts and bolts.

B. Where required by Drawings, provide approved restrained joints for buried service. Refer to City’s List of Approval Products for approved joint restraint mechanisms.

C. Threaded or grooved-type joints which reduce pipe wall thickness below minimum required are not acceptable.

D. Provide for restrained joints designed to meet test pressures required under Section 02515 - Hydrostatic Testing of Pipelines or Section 02532 - Sanitary Sewer Force Mains, as applicable. Provide restrained joints for test pressure or maximum surge pressure as specified, whichever is greater for water lines. Do not use passive resistance of soil in determining minimum restraint lengths.

E. Electrical Bond Wires: Bond Wires; use stranded, copper cable furnished with high molecular weight polyethylene insulation (HMWPE). Use wire gauge (AWG) as shown on Drawings.

F. Make curves and bends by deflecting joints. Do not exceed maximum deflection recommended by pipe manufacturer for pipe joints or restraint joints. Submit details of other methods of providing curves and bends for consideration by Project Manager. When other methods are deemed satisfactory, install at no additional cost to City.

2.03 GASKETS

A. Furnish, when no contaminant is identified, plain rubber (SBR) gasket material in accordance with ANSI A21.11 or ASTM F 477; for flanged joints 1/8-inch-thick gasket in accordance with ANSI A 21.15.

B. For pipes to be installed in potentially contaminated areas, see Specification Section 02105 - Sampling and Analysis in PPCA.

C. For Pipes to be installed in any other contaminated areas, use gaskets as recommended by the Pipe Manufacturer, Engineer of the Record and approved by City Engineer prior to installation.

2.04 FITTINGS

A. Use fittings of same size as pipe. Reducers are not permitted to facilitate an off-size fitting. Reducing bushings are also prohibited. Make reductions in piping size by reducing fittings. Line and coat fittings as specified for pipe they connect to.

B. Push-on Fittings: ANSI A 21.10; ductile iron ANSI A 21.11 joints, gaskets, and lubricants; pressure rated at 250 psig.

C. Flanged Fittings: ANSI 21.10; ductile iron ANSI A 21.11 joints, gaskets, and lubricants;
CITY OF HOUSTON  
2019 STANDARD SPECIFICATION  
DUCTILE IRON PIPE AND FITTINGS

pressure rated at 250 psig.

D. Mechanical Joint Fittings: ANSI A 21.11; pressure rated at 250 psi.

E. Ductile Iron Compact Fittings: Shall conform to AWWA C153 and shall be:

1. Fusion bonded epoxy lined or
2. Cement mortar lined.

F. For tangential flanged outlets shown on Drawings, substitute with a tee with an equivalent sized outlet unless otherwise approved by Project Manager.

2.05 COATINGS AND LININGS

A. Water line Interiors: ANSI A21.4, cement lined with seal coat; ANSI A 21.16 fusion bonded epoxy coating for interior; comply with NSF 61.

B. Sanitary Sewer and Force Main Interiors:

1. Preparation: Commercial blast cleaning conforming to SSPC-SP6.
2. Liner thickness: Nominal 40 mils, for pipe barrel interior; minimum 6 to 10 mils at gasket groove and outside spigot end to 6-inches back from end.
4. Acceptable Lining Materials:
   a. Provide approved virgin polyethylene conforming to ASTM D 1248, with inert fillers and carbon black to resist ultraviolet degradation during storage; heat bonded to interior surface of pipe and fittings.
   b. Ceramic Epoxy – Protecto 401 or approved equal.

C. Sanitary Sewer Point Repair Pipe: For pipes which will be lined with high density polyethylene liner pipe or cured-in-place liner, provide cement-lined with seal coat in accordance with ANSI A 21.4. For pipes which will not be provided with named liner, provide pipe as specified in Paragraph 2.05B, Sanitary Sewer and Force Main Interiors.

D. Exterior:

1. Encasement and coating requirement for water lines
   a. Open cut construction method:
      1) Provide double wrap polyethylene encasement applied in accordance with AWWA C105 or
2) Provide Polyurethane coating in accordance with Section 02527 - Polyurethane Coatings on Steel and Ductile Iron Pipe.

b. Auger or casing construction method:

1) Provide Polyurethane coating in accordance with Section 02527 - Polyurethane Coatings on Steel and Ductile Iron Pipe or

2) Provide minimum thickness Class 52 pipe, double wrap with polyethylene encasement. Place circumferential wraps of tape or plastic tie straps at two-foot intervals along the barrel of the pipe, and thoroughly seal each end of the polyethylene tube.

c. Tunnel, Casing or Direct Bury: Conform to requirements of Paragraph 2.05E.


E. Polyethylene Wrap: For buried sanitary sewer pipes not cathodically protected, provide polyethylene wrap unless otherwise specified or shown. For water lines, provide polyethylene wrap unless otherwise specified or shown. Conform to requirements of Section 02528 - Polyethylene Wrap.

F. For flanged joints in buried service, provide petrolatum wrapping system, Denso, or ecual, for the complete joint and alloy steel fasteners. Alternatively, sanitary sewer lines may use bolts made of Type 304 stainless steel.

G. Pipe to be installed in potentially contaminated areas shall have coatings and linings recommended by the manufacturer for maximum resistance to the contaminants identified in the Phase II Environmental Site Assessment Report. If no alternative coating is specified for water lines, provide polyethylene wrap in potentially contaminated areas.

2.06 MANUFACTURERS

A. Use pre-approved manufacturers listed in City of Houston approved products.

PART 3 EXECUTION

3.01 INSTALLATION

A. Conform to installation requirements of Sections 02511 - Water Lines, 02531 - Gravity Sanitary Sewers, 02532 - Sanitary Sewer Force Mains 02631 - Storm Sewers and 02553 - Point Repairs and Obstruction Removal, except as modified in this Section.

B. Install in accordance with AWWA C 600 and manufacturer's recommendations.

C. Install double wrap polyethylene encasement in conformance with requirement of AWWA
CITY OF HOUSTON  
2019 STANDARD SPECIFICATION  
DUCTILE IRON PIPE AND FITTINGS

C105 and Section 02528 – Polyethylene Wrap.

D. Holiday Testing.

1. Polyurethane: Conform to requirements of Section 02527 - Polyurethane Coatings for Steel or Ductile Iron Pipe.

2. Fusion Bonded Epoxy: Conform to requirements for new fittings in ANSI A 21.16.

E. Provide electrical continuity bonding across buried mechanical and push-on joint assemblies, except where insulating flanges are required by Drawings.

1. Provide minimum number of bond wires shown on Drawings. Remove one inch of HMWPE insulation from each of bond wire prior to attaching.

2. Secure wire onto pipe using approved Thermite Welding procedures.

3. Coat bare metal and weld metal after weld is secure. Use coal-tar compound or other compatible coating. For polyurethane coated pipe, use compatible polyurethane coating.

4. Visually inspect Thermite Weld connections for electrical continuity, strength and suitable coating prior to backfilling or placing pipe in augered hole or casing.

3.02 FIELD REPAIR OF COATINGS

A. Polyurethane: Conform to requirements of Section 02527 - Polyurethane Coatings for Steel or Ductile Iron Pipe.

B. Fusion Bonded Epoxy: Conform to requirements for new fittings in ANSI A 21.16.

END OF SECTION
PART 1    GENERAL

1.01    SECTION INCLUDES

A. Polypropylene (PP) pipe for gravity sanitary sewers and drains, including fittings.

B. Polypropylene (PP) pipe for gravity storm sewers and culverts.

1.02    MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for PP pipe under this Section. Include cost in unit prices for work, as specified in following sections:

a. Section 02531 - Gravity Sanitary Sewers

b. Section 02631 – Storm Sewers

2. Refer to Section 01270- Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.03    REFERENCES

A. AASHTO M330 - Polypropylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter.


E. ASTM F 2764 - Standard Specification for 6 to 60 in. [150to 1500 mm] Polypropylene (PP) Corrugated Double and Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications.
F. ASTM F 2881- Standard Specification for 12 to 60 in. [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330- Submittal Procedures.

B. Submit shop drawings showing design of pipe and fittings indicating alignment and grade, pipe length, laying dimensions, fabrication, fittings, flanges, gasket material, and special details.

C. Submit detailed calculations for pipe design per AASHTO LRFD Bridge Design Specifications.

D. Submit details of Pipe Joints and jointing procedure for PP pipe.

1.05 QUALITY CONTROL

A. Provide manufacturer's certificate of conformance to Specifications.

B. Furnish pipe and fittings that are homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. Provide pipe as uniform as commercially practical in color, opacity, density, and other physical properties.

C. Project Manager reserves right to inspect pipes or witness pipe manufacturing. Inspection shall in no way relieve manufacturer of responsibilities to provide products that comply with applicable standards and these Specifications.

1. Manufacturer's Notification: Should Project Manager wish to witness manufacture of specific pipes, manufacturer shall provide Project Manager with minimum three weeks notice of when and where production of those specific pipes will take place.

2. Failure to Inspect. Approval of products or tests is not implied by Project Manager's decision not to inspect manufacturing, testing, or finished pipes.

D. Pipe manufacturer to provide services of experienced, competent, and authorized representative to visit site to advise and consult Contractor during jointing and installation of pipe.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this section with documented experience of minimum 5 years of pipe installations that have been in successful, continuous service for same type of service as proposed Work.
PART 2 PRODUCTS

2.01 GENERAL

A. Provide products manufactured by companies listed on the City of Houston Standard Product List.

B. Furnish corrugated-wall gravity sanitary sewer pipe with bell-and-spigot end construction conforming to ASTM D 3212. Joining will be accomplished with dual elastomeric gaskets in accordance with manufacturer’s recommendations. Use integral bell-and-spigot gasketed joint designed so that when assembled, elastomeric gasket, contained in machined groove on pipe spigot, is compressed radially in pipe bell to form a positive seal. Design joint to avoid displacement of gasket when installed in accordance with manufacturer's recommendations.

C. Furnish corrugated-wall polypropylene (CPP) pipe for gravity storm sewer and storm sewer culvert pipe. Joints shall be installed such that connection of pipe sections will form continuous line free from irregularities in flow line. Suitable joints are:

1. Integral Bell and Spigot with dual elastomeric gaskets. Bell shall overlap minimum of two corrugations of spigot end when fully engaged.

D. Jointing:

1. Gaskets:

   a. Meet requirements of ASTM F 477. Use gasket molded into circular form or extruded to proper section and then spliced into circular form. When no contaminant is identified, use gaskets of properly cured, high-grade elastomeric compound. Basic polymer shall be natural rubber, synthetic elastomer, or blend of both.

   b. PP Pipes are Not allowed to be installed in potentially contaminated areas, unless approved by City Engineer.

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<th>CONTAMINANT</th>
<th>GASKET MATERIAL REQUIRED</th>
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<tr>
<td>Petroleum (diesel, gasoline)</td>
<td>Nitrile Rubber</td>
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<td>Other Contaminants</td>
<td>As recommended by pipe manufacturer</td>
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</table>

2. Lubricant. Use lubricant for assembly of gasketed joints which has no detrimental effect on gasket or on pipe, in accordance with manufacturer's recommendations.

3. Diameters 12- through 60-inch shall have a reinforced bell with a polymer composite band installed by the manufacturer.
2.02 MATERIALS FOR SANITARY SEWER

A. Pipe and Fittings: Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F 2764.

2.03 MATERIALS FOR GRAVITY STORM SEWERS AND STORM SEWER CULVERTS

A. Pipe and Fittings: Polypropylene compound for pipe and fittings production shall be impact modified copolymer meeting the material requirements of ASTM F 2881 and AASHTO M330.

2.04 TEST METHODS FOR SANITARY SEWER

A. Conditioning

1. Conditioning of samples prior to and during tests is subject to approval by Project Manager. When referee tests are required, condition specimens in accordance with ASTM F 2764, section 7.1.1.

B. Flattening

1. Flatten three specimens of pipe, prepared in accordance with ASTM F 2764, section 7.5.

C. Joint Tightness

1. Test for joint tightness in accordance with ASTM D 3212.

D. Purpose of Tests

1. Flattening and joint tightness tests are not intended to be routine quality control tests, but rather to qualify pipe to a specified level of performance.

2.05 TEST METHODS FOR GRAVITY STORM SEWERS AND STORM CULVERTS

A. All testing and material requirements shall be in accordance with ASTM F 2881.

B. MANDREL TESTING: use a mandrel to test flexible pipe for deflection. Refer to Section 02533 – Acceptance Testing for Sanitary Sewers for the mandrel and test requirements.

2.06 MARKING

A. Mark each standard and random length of pipe in compliance with these Specifications with following information:

1. Pipe size.
2. Pipe class.
3. Production code.

PART 3 EXECUTION

3.01 INSTALLATION

A. Conform to requirements of following Sections:
   1. Section 02550 – Slip lining Sanitary Sewers.
   2. Section 02531 - Gravity Sanitary Sewers.

B. Install pipe in accordance with the manufacturers recommended installation procedure and ASTM D 2321

C. PP pipe is not approved in applications requiring gaugering of pipe.

D. Bedding and backfill: Conform to requirements of Section 02317 - Excavation and Backfill for Utilities.

E. Use only workmen trained in the installation of PP Pipe.

F. Cutting pipe: Comply with pipe manufacturer's recommendations. After cutting, leave end pipe in accordance with manufacturer's recommendations.

END OF SECTION
PART 1  GENERAL

1.01  SECTION INCLUDES

A.  Bolts, anchors, nuts, sleeves, concrete anchors, scheduled items, and other miscellaneous metal items not specifically included under other sections of these specifications.

1.02  MEASUREMENT AND PAYMENT

A.  Unit Prices

1.  No separate payment will be made for metal fabrications under this section. Include payment as part of the Work in appropriate sections.

2.  Refer to Section 01270 - Measurement and Payment.

B.  Stipulated Price (Lump Sum). If the Contract is a Stipulated Price Contract, payment for work in this Section is included in the total Stipulated Price.

1.03  REFERENCES


B.  ASTM A 53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.


D.  ASTM A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.


G.  ASTM A 500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.

H.  ASTM A 501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

I.  ASTM F 593 - Stainless Steel Bolts, Hex Cap Screws, and Studs.
1.04 SUBMITTALS

A. Submit following Section 01330 - Submittal Procedures.

B. Shop Drawings: Indicate profiles, sizes, thickness, grade class, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

C. Indicate welded connections using standard AWS A 2.0 welding symbols. Indicate net weld lengths.

D. Submit manufacturer’s technical literature and test reports showing certified capacities for concrete anchors.

E. When foreign manufactured material is proposed for use, test material for conformance to ASTM Standards by a certified independent testing laboratory located in the United States. Certification from any other source outside the United States is unacceptable. Furnish copies of test reports to Project Manager for review. Do not begin fabrication until material has been approved. No additional payment will be made for this testing.

1.05 QUALIFICATIONS

A. Prepare shop drawings under direct supervision of a professional Structural Engineer experienced in design of this work and licensed in the State of Texas.

B. Welders' Certificates: Submit following Section 01330 - Submittal Procedures, certifying welders employed on the Work, verifying AWS D1.1, Structural Welding Code, using procedures, materials and equipment of type required for this work. Welder must have been qualified or re-certified within the previous 12 months of date welding is being performed.

1.06 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on Drawings.
1.07 DELIVERY AND STORAGE

A. Materials stored at project site: Store above ground on platforms, skids, or other supports. Keep free of dirt, mud, grease, or oil. Protect from corrosion.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Shapes and Plate: ASTM A 36.

B. Stainless Steel Sections: ASTM A 276, Type 316 for non-welded items and Type 316L for welded items.

C. Steel Tubing: ASTM A 500 or ASTM A 501, Grade B.


E. Bolts, Nuts, and Washers: ASTM A 307 galvanized to ASTM A 153 for galvanized components. Provide anchor bolts for all equipment and machinery when anchor bolts are not furnished by manufacturer. Conform anchor size, length, projection, etc., to requirements of equipment and machinery manufacturer. Provide templates to accurately position anchor bolts in forms.

F. Stainless Steel Bolts and Nuts: Bolts in accordance with ASTM F 593, Type 316; nuts in accordance with ASTM F 594, Type 316; UNC coarse threads.

G. Concrete Anchors: Concrete anchors are inserted into holes drilled in hardened concrete. Use one of the following types:

1. Adhesive Anchors: For concrete anchors which are submerged, in splash zones, in enclosed spaces over liquids, or anchoring vibrating equipment, use epoxy adhesive anchors. Adhesive anchors may be used at all locations where concrete anchors are required. Epoxy systems shall be Sika/FI System with Sikadur Injection Gel Epoxy, Master Builders Concreseve Epoxy Cartridge Dispensing System and Concreseve Paste LPL, or equal. Threaded rods shall be ASTM F 593, Type 316 studs. Where adhesive anchors, or connected metal, are exposed to direct sunlight, the anchors shall be certified to maintain at least 90 percent of their rated strength (tested at 73 F) when tested at 160 F.

2. Expansion Anchors: Where concrete anchors are indicated and adhesive anchors are not required, wedge type anchors made with ASTM A 276, Type 316 Stainless Steel shall be used. Anchors shall be KWIK Bolt II By Hilti, Inc., or equal.

H. Welding Materials: AWS D 1.1; type required for materials being welded.
I. Shop and Tcuch-Up Primer: Same manufacturer as protective coating; compatible with protective coating; applied in accordance with manufacturer’s recommendation.

2.02 FABRICATION

A. Fit and shop-assemble in largest practical sections for delivery to site.

B. Fabricate items with joints tightly fitted and secured. Weld all shop connections except where welding is not practical, or unless otherwise shown on Drawings. Where screw bolts cannot be avoided, conceal fasteners where possible or countersink heads, screw up tight and nick threads to prevent loosening. Weld joints continuously except as shown on Drawings.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

F. Welding shall conform to requirements of AWS D1.1, Structural Welding Code – Steel. Perform welding not governed by above in accordance with best modern practice for strength and durability.

2.03 FINISHES

A. Prepare surfaces to be primed in accordance with SSPC SP-2.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Galvanize, after completion of welded fabrication, in accordance with ASTM A 123, structural steel members. Provide minimum 1.25 ounces per square foot galvanized coating.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and ready to receive work.

B. Beginning of installation means erector accepts existing conditions.
3.02 PREPARATION
A. Clean and strip primed steel items to bare metal where site welding is required.
B. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate sections.
C. Coat stainless steel threads with an anti-seizing compound prior to installing nuts.

3.03 INSTALLATION
A. Install items plumb and level, accurately fitted, free from distortion or defects.
B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
C. Field weld components indicated on shop drawings.
D. Perform field welding in accordance with AWS D 1.1.
E. Obtain Project Manager approval prior to cutting or making adjustments in the field.
F. After erection, prime welds, abrasions, and surfaces not shop primed except surfaces to be in contact with concrete.

3.04 ERECTION TOLERANCES
A. Maximum Variation from Plumb: 1/4-inch per story, non-cumulative.
B. Maximum Offset from True Alignment: 1/4-inch.

3.05 COATING REPAIRS
A. Thoroughly clean field welds, abrasions, and damaged or defective areas of galvanized surfaces to remove all loose, cracked or bruised splatter coating. After surface is prepared, for galvanized surfaces apply two coats of galvanizing repair coating, as approved by Project Manager. Repair other coated surfaces in accordance with manufacturer’s recommendations, unless otherwise specified.

END OF SECTION
Contractor's Application for Payment No. 1-6780

Application For Payment

<table>
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<th>Change Order Summary</th>
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<tr>
<td>1. ORIGINAL CONTRACT PRICE</td>
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<td>3. Current Contract Price (Line 1 + 2)</td>
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<td>b. 10% X Stored Material</td>
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<td>8. AMOUNT DUE THIS APPLICATION</td>
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<td>9. BALANCE TO FINISH, PLUS RETAINAGE (Column G total on Progress Estimates + Line 5c above)</td>
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Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

1. All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment.
2. Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances), and
3. All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor's Signature

By: [Signature] Date: [Date]

Payment of: $ [Line 8 or other - attach explanation of the other amount]

is recommended by: [Engineer] (Date)

Payment of: $ [Line 8 or other - attach explanation of the other amount]

is approved by: [Owner] (Date)

Approved by: Funding or Financing Entity (if applicable) (Date)
## Progress Estimate - Unit Price Work

**Contractor's Application**

**For (Contract):** Public Works Detention Pond Pump Station  
FEMA HMGP DR-4272-0024-TX

**Application Period:**

**Application Number:**

**Application Date:**

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<th>Estimated Quantity Installed</th>
<th>Value of Work Installed to Date</th>
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**Totals**

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EJCDC® C-620 Contractor's Application for Payment  
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ATTORNEY'S REVIEW CERTIFICATION

I, the undersigned, ____________________________, the duly authorized and acting legal representative of the ____________________________, do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and am of the opinion that each of the agreements may be duly executed by the proper parties, acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties; and that the agreements shall constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

Attorney's signature: ____________________________ Date: ________________

Print Attorney's Name: ____________________________
Texas State Bar Number: ____________________________

N/A