CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

FOR THE

Avenue G Pump Station Improvements

Bid No. 51-10-22

CITY COUNCIL

Tim Davis	Mayor
Judy Morales	Mayor Pro-Tem
Jessica Walker	Councilmember
Susan Long	Councilmember
Wendell Williams	Councilmember

STAFF

Brynn Meyers	City Manager
Don Bond, P.E.	Director of Public Works

Prepared By

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS
Firm No. F-510
254-773-3731

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED
PROFESSIONAL ENGINEER
7/7/22

July 2022

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City of Temple
Avenue G Pump Station Improvements

[1] See electrical drawings within plans for electrical specifications.
[2] See structural drawings within plans for structural specifications.

CITY OF TEMPLE, TEXAS
Ave G Pump Station Improvements

ADDENDUM NO. 1
September 16, 2022

The construction plans and specifications for the Avenue G Pump Station Improvements project, on which bids are to be received until 2:30 PM on Wednesday, September 28, 2022, are hereby modified as follows:

I. GENERAL/CONTRACT DOCUMENTS

1. A Non-Mandatory pre-submittal conference was held on September 15, 2022, in Microsoft Teams Meeting at 2:00 PM. Attached are copies of the agenda. The attendance list for this conference can be found on the City of Temple Purchasing Department website https://app.negometrix.com/buyer/4733/tenders .

II. PLAN SHEETS

1. Refer to sheet G-08. Revised Note 1 for proposed 24" suction line, not 30" in the sentence, "The proposed wet tap and gate valve for connecting the proposed 24" DIP suction line to the existing 30" C-301 suction line shown on sheet P-07 shall be performed by certified technicians with Thompson Pipe. Attached is revised Sheet G-08 dated September 16, 2022, which reflects these changes.

2. Refer to Sheet P-16. Attached is revised Sheet P-16 dated September 16, 2022, which reflects the changes and additions described below.

    a. Pump Station Operation Sequence by Stage, Stage 1. The existing pump station pumps, motors and electrical shall remain in full operation during construction of the proposed 24" (Meter Vault A) discharge line piping and wet taps and 24"/30" suction line piping and wet tap. Added to note, "The proposed 24" wet tap and gate valve for connecting the proposed 24" DIP suction line to the existing 30" C-301 suction line shown on Sheet P-07 shall be performed by certified technicians with Thompson Pipe."

    b. Pump Station Operation Sequence by Stage, Stage 1A, has been added to address a potential conflict with the existing underground electrical feed to the existing pump station.

    c. Pump Station Operation Sequence by Stage, Stage 2. Added the following:

    Prior to beginning construction, Contractor shall perform exploratory excavation to locate ends of a full joint of the existing 30" C-301 prestressed concrete pipe in the area shown in the green highlight. The entire joint of pipe shall be removed, and dished head plugs shall be welded to the respective ends/joints of the existing 30" pipe to remain in place. Furnish concrete blocking for the installed plugs.

    d. Pump Station Operation Sequence by Stage, Stage 4. Added Note block, Note 1. Existing gate valves, at the existing meter vaults to be abandoned, shall be removed and blind flanges furnished and installed at each tee under Stage 4. Existing gate valves (EGV-1 and EGV-2) shall be closed to allow removal of valves and installation of blind flanges. Flanges are shown in red.

III. TECHNICAL SPECIFICATIONS

1. Refer to Appendix A of Technical Specification. Attached are copies of the BNSF Temporary Occupancy and Pipeline Permit Conditions for inclusion under Appendix A-2 and A-3, respectively. Contractor shall comply with all Permit Conditions included in these permits. Please note that Appendix A-3 has been renamed from General License to Pipeline.

2. Refer to Technical Specification M01-Horizontal Split Case Pumps and Motors.

    a. Under Subsection M01.04, Subpart A, to assure unity of responsibility, the motors, couplings, guards and supporting bases shall be furnished by the pump supplier, not the pump manufacturer.

    b. Under Subsection M01.11, Subpart C, pump motors shall have Open Drip Proof (ODP) enclosures. Remove TEFC. Add verbiage, 'Motors driven by VFD shall have ODP enclosures with insulated bearings and shaft grounding brushes'

IV. BID SUBMITTAL

1. Bidders shall acknowledge receipt of this Addendum in the space provided in the proposal and on the outer envelope of their bid.

9/14/22

Date

Rick N. Kasberg, P.E.
Kasberg, Patrick & Associates, LP
19 North Main St.
Temple, Texas 76501

CITY OF TEMPLE, TEXAS
Ave G Pump Station Improvements

ADDENDUM NO. 2
September 23, 2022

The construction plans and specifications for the Avenue G Pump Station Improvements project, on which bids are to be received until 2:30 PM on Wednesday, September 28, 2022, are hereby modified as follows:

I. PLAN SHEETS

1. Refer to Sheet E2.4. Provide and install interlock wiring and relays between the exhaust fans and louvers. When exhaust fans receive a run signal from the thermostat, louvers to open. ¾"C, 4#14 from each exhaust fan to each louver.

2. Refer to Sheet P-11. In Section H-H change the suction pipe reducers labeled "H" to Eccentric Reducers. The flat side of the eccentric reducers shall be faced upward to prevent air pockets from forming on the suction side of the pump.

3. Refer to Sheet S4.7, Detail 2 – Header Pit Cross Section. Galvanized Pipe Straps will not be required.

4. Refer to Sheets P-02 thru P-04. All furniture, desk, chairs, book shelfs, and office machines and devices will be removed by the Owner prior to beginning of construction.

5. Refer to Sheets P-11 thru P-13. Proposed couplings shown on these plan sheets shall be Flanged Dresser Style 128 as manufactured by Smith Blair or approve equal.

6. Refer to Sheet E6.0.

   a. Delete the two (2) Phoenix Radios shown on the RTU Schematic. These were shown in error.
   b. The radio shown in the RTU Schematic shall be a Phoenix Model #2901540 or approved equal.
   c. The Ethernet Switch shown in the RTU Schematic shall be a Automation Direct Stride Model #SE-SWSU-WT or Moxa or approved equal.

II. TECHNICAL SPECIFICATIONS

1. Refer to Technical Specifications Section G06 – Ductile Iron Pipe & Fittings.

   a. Under Subsection G06.02, add Subpart E. Nuts and Bolts as follows:

      1. Aboveground:
         a. Hex head bolts and nuts:
            1) Bolts per ANSI B18.2.1.
            2) Nuts per ANSI B18.2.2.
         b. Number, size, and length per Table 15.2 of AWWA C115.

c. Material:

Stainless Steel 316 (for installation on all flanged and ductile iron pipe in proposed pump station building and pipe chases – supply nylon isolation washers on both the nut and bolt head sides .

2. Underground:
   a. Tee-head bolts and hexagonal nuts per AWWA C111.
   b. Number, size, and length per Table 11.1 of AWWA C111.
   c. Material:

Low alloy steel or high strength cast iron in accordance with AWWA C111.

2. Refer to Technical Specifications Section G08 – Valves and Backflow Preventers.

   a. Change Subsection G08.07 to be G08.09. Add Subsection G08.07. Butterfly Valves, as follows:

      1. General: Butterfly valves shall comply with AWWA C504 and following requirements:
         a. Suitable for throttling operations and infrequent operations after periods of inactivity.
         b. Flanged end, short body type, Class 150.
         c. Elastomer seats bonded or vulcanized to body shall have adhesive integrity of bond between seat and body assured by testing with minimum 75-pound pull in accordance with ASTM D429, Method B.
         d. Bubble-tight with rated pressure applied from either side.
         e. No travel stops for the disc on interior of the body.
         f. Self-adjusting V-type or O-ring shaft seals.
         g. Isolate metal-to-metal thrust bearing surfaces from flow stream.
         h. Buried valves shall be designed for buried service.
         i. Butterfly valves shall be as manufactured by DeZurik or Pratt or approved equal.

   b. Add Subsection G08.08. Flap Valves, as follows:

      1. General: Flap Valve shown in Section K-K on Sheet P-12 and labeled "LL" shall be a 12" Model A25406 as manufactured by Troy Valve or approved equal.

3. Refer to Technical Specifications Section M01 – Horizontal Split Case Pumps and Motors.

   1. Add Subsection M01.01, B, as follows: "Pumps must meet NSF – 61 requirements "

   2. Under Subsection M01.09, A, add Patterson Pumps Model 10x8 M-C as a pre-approved equal. The pumps within each service type shall be identical in every respect with all parts interchangeable. Integral pump nozzles shall be 180 degrees apart and shall have the same centerline axis. Integral pump nozzle sizes for the Patterson Pumps shall be minimum 8" discharge & 10" suction and shall be supplied with ANSI Class 125 flanges. Minimum nozzle sizes shall not be attained by addition of standard ACIP reducing/increasing fittings. Contractor shall coordinate

changes to the suction and discharge reducers required if proposing Patterson Pumps.

3. Under Subsection M01.09, B, Change the Maximum Allowable NPSHR at Design Duty Point (feet) of 10 to "Maximum Allowable NPSHR across entire published pump curve shall not exceed 25 feet. "

4. Under Subsection M01.11 C, motors shall be inverter duty type.

5. Under Subsection M01.13 A.1. remove the wording "except for NPSHR'.

6. Under Subsection M01.13 add Subsection C as follows:

   C. Perform NPSHR testing on the 1st unit ready for testing. Determine the Net Positive Suction Head required under both "1% head drop" and at "3% head drop" conditions and provide a composite curve for each. Conduct in accordance with Hydraulic Institute Standards, but at both the 1% head drop and 3% head drop conditions. Take at least five (5) points for NPSHR condition over the pump's Allowable Operating Range (A.O.R.). One point shall be at each end of the A.O.R. One point will be at approximately at rated point, design point, and minimum head point for continuous operation.

III. BID SUBMITTAL

1. Bidders shall acknowledge receipt of this Addendum in the space provided in the proposal and on the outer envelope of their bid.

9/23/22

Rick N. Kasberg, P.E. — Date

Kasberg, Patrick & Associates, LP
19 North Main St.
Temple, Texas 76501

STATE OF TEXAS
RICK N. KASBERG
70163
REGISTERED PROFESSIONAL ENGINEER

NOTICE TO BIDDERS

Sealed bids addressed to Joe Simmons, General Manager will be received at the office of Kasberg, Patrick & Associates, LP (KPA Engineers); 19 North Main Street; Temple, Texas 76501 until 2:00 PM on Wednesday, September 28, 2022 for construction of the Avenue G Pump Station Improvements. The bids shall be labeled:

Avenue G Pump Station Improvements

The Bid/Contract Documents, including Construction Plans, Technical Specifications, Bid Forms and Geotechnical Report are available beginning Monday, September 5, 2022 at 8:00 AM:

- Electronic format available via email (rkasberg@kpaengineers.com) from KPA Engineers at no charge.
- Hard copies available at KPA Engineers-Georgetown; 800 South Austin Avenue; Georgetown, Texas 78626 and KPA Engineers-Temple; 19 North Main Street; Temple, Texas 76501; 254-773-3731, for a non-refundable fee of $100.00 per set, checks made payable to Kasberg, Patrick & Associates, LP.

The bids will be publicly opened and read aloud at KPA Engineers-Temple at 2:00 PM on Wednesday, September 28, 2022. The City of Temple Board of Directors will officially review the bids at their next regularly scheduled meeting and award the contract as soon thereafter as practical. It is anticipated that award of construction contract will be made September 16, 2022.

Bids must be submitted on the Bid Form provided and must be accompanied by a cashier's check, certified check or acceptable bidder's bond payable without recourse to the City of Temple in an amount not less than five (5) percent of the bid submitted as a guarantee that the bidder will enter into a contract and execute a Performance Bond and a Payment Bond within ten (10) days after the notification of the award of the contract. Bids can be submitted in hard copies or via email (rkasberg@kpaengineers.com).

City of Temple reserves the right to accept or reject any and all bids, as the best interest of the City may require, and to waive any informality in bids received. City of Temple also reserves the right to award the Contract as may be advantageous to the Corporation.

A Non-Mandatory Pre-bid conference will be held at the office of KPA Engineers-Temple; 19 North Main Street; Temple, Texas 76501, at 2:00 PM on Wednesday, September 14, 2022.

All questions and inquiries about the project should be directed to Rick N. Kasberg, P.E., until noon on Friday, September 23, 2022. Questions after that time and date will not be addressed and the Engineer and/or Owner shall not be bound by any references or dates obtained by the Bidders unless an official addendum is produced and released by KPA Engineers.

SPECIAL PROJECT INFORMATION
TO BIDDERS/CONTRACTORS

A. All questions and inquiries about the project should be directed to **Rick N. Kasberg, P.E., until noon on Friday, September 23, 2022**. Questions after that time and date will not be addressed and the Engineer and/or Owner shall not be bound by any references or dates obtained by the Bidders unless an official addendum is produced and released by Kasberg, Patrick & Associates, LP.

B. Daily, on-site construction representation and observation will be provided by the City of Temple and/or a representative of the City of Temple.

C. Contract Administration and Pay Estimate Approvals will be provided by Kasberg, Patrick & Associates, LP.

D. The Bid Item for Mobilization, Bonds and Insurance shall not exceed 5% of the total amount Bid for any particular Base Bid, Add Alternate Bid or Alternate Bid.

INSTRUCTION TO BIDDERS
FOR CONSTRUCTION

1. Use of Separate Bid Forms

These contract documents include a complete set of bid and contract forms which are for the convenience of the bidders and are not to be detached from the contract document, completed or executed. After questions and inquiries cut-off time, a separate bid form will be provided for your use.

2. Interpretations or Addenda

Each request for an interpretation shall be made to the engineer. Each interpretation made will be in the form of an Addendum to the contract documents and will be distributed to all parties holding contract documents no less than one (1) day prior to the bid opening. It is, however, the bidder's responsibility to make inquiry as to any addenda issued. All such addenda shall become part of the contract documents and all bidders shall be bound by such addenda, whether or not received by the bidder.

3. Inspection of Site

Each bidder should visit the site of the proposed work and fully acquaint himself with the existing conditions there and should fully inform himself as to the facilities involved, the difficulties and restrictions attending the performance of the contract. The bidder should thoroughly examine and familiarize himself with the drawings, technical specifications and all other contract documents. The contractor, by the execution of the contract, shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal document or to visit the site or acquaint himself with the conditions there existing. The City of Temple will be justified in rejecting any claim based on lack of inspection of the site prior to the bid.

4. Bids

a) All bids must be submitted on the forms provided and are subject to all requirements of the Contract Documents, including the Drawings.

b) All bids must be regular in every respect and no interlineation, excisions or special conditions may be made or included by the bidder.

c) The City may consider as irregular any bid on which there is an alteration of or departure from the bid form and, at its option, may reject any irregular bid.

d) If contract is awarded, it will be awarded to the lowest responsible bidder on the basis of the base bid and the selected alternate bid items, if any. The contract will require the completion of the work in accordance with the contract documents.

5. Bid Bond

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

b) The bid bond or its comparable, will be returned to the bidder as soon as practical after the opening of the bids.

6. Unit Price

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

7. Corrections

Erasures or other corrections in the bid must be noted over the signature of the bidder.

8. Time for Receiving Bids

Bids received prior to the advertised hour of opening will be kept securely sealed. The officer appointed to open the bids shall decide when the specified time has arrived and no bid received thereafter will be considered.

9. Opening of Bids

The City of Temple shall, at the time and place fixed for the opening of bids, open each bid and publicly read it aloud, irrespective of any irregularities therein. Bidders and other interested individuals may be present.

10. Withdrawal of Bids

Bidder may withdraw the bid before the time fixed for the opening of bids, by communicating his purpose in writing to the City of Temple. Upon receipt of such notice, the unopened bid will be returned to the bidder. The bid guaranty of any bidder withdrawing his bid will be returned promptly.

11. Award of Contract/Rejection of Bids

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

12. Execution of Agreement/Performance and Payment Bonds

a) The failure of the successful bidder to execute the agreement and supply the required bonds within ten (10) days after the prescribed forms are presented for signature, or within such extended period as the City of Temple may grant, shall constitute a default and the City of Temple may, at its option either award the contract to the next lowest responsible bidder, or re-advertise for bids. In either case, the City of Temple may charge against the bidder the difference between the amount of the bid, and the amount for which a contract is subsequently executed irrespective of whether this difference exceeds the amount of the bid bond. If a more favorable bid is received through re-advertisement, the defaulting bidder shall have no claim against the City of Temple for a refund.

BID SCHEDULE
FOR
CITY OF TEMPLE
AVENUE G PUMP STATION IMPROVEMENTS

BASE BID

Item No.	Estimated Quantity	Unit	Description	Unit Price	Total Amount (in numerals)
1	100%	Lump Sum	Mobilization, Bonds and Insurance, not-to-exceed 5% of the Base Bid Amount, Complete For	$ _____	$ _____
2	100%	Lump Sum	For developing and furnishing a Trench Safety Plan, signed by a P.E. licensed in the State of Texas, specific to this project, Complete For	$ _____	$ _____
3	475	Linear Feet	For Trench Safety Implementation (pipe over 5 ft deep), Complete in Place For	$ _____	$ _____
4	500	Square Feet	For Trench Safety Implementation (structures over 5 ft deep), Complete in Place For	$ _____	$ _____
5	100%	Lump Sum	Prepare Stormwater Pollution Prevention Plan, Including Submission to and Receiving Permits from Texas Commission on Environmental Quality (TCEQ), Complete For	$ _____	$ _____
6	100%	Lump Sum	For Implementation of SW3P Controls for the Extent of the Construction Project, in Accordance With Regulations and Permits, Including Removal When Allowed by Site Conditions and Permits, Complete For	$ _____	$ _____

BID SCHEDULE
FOR
CITY OF TEMPLE
AVENUE G PUMP STATION IMPROVEMENTS

BASE BID

Item No.	Estimated Quantity	Unit	Description	Unit Price	Total Amount (in numerals)
7	100%	Lump Sum	For Furnishing All Materials, Equipment, Labor and Superintendence and Incidental Work to Demolish and Construct the Avenue G Pump Station Improvements Including All Civil, Mechanical, Structural, Electrical, HVAC, Controls and Necessary Components for a Fully Operational System as Shown on the Plans and Specified in the Technical Specifications (All Components Not Specifically Broken Out in the Bid Form), Complete in Place For	$ _____	$ _____
8	100%	Lump Sum	Provide Project Record Drawings (As Builts), Complete For	$ _____	$ _____

TOTAL BID AMOUNT - BASE BID (ITEMS 1 - 8)

BID AMOUNT $ _____
(Numerals)

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____(L.S.)
Principal

_____
Surety

By: _____

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

END OF SECTION

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____as Principal, and_____as Surety, are hereby held and firmly bound unto City of Temple OWNER in the penal sum of _____for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

SIGNED, this _____ day of _____, 2022. The Condition of the above obligation is such that whereas the Principal has submitted to City of Temple a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the

City of Temple
Avenue G Pump Station Improvements

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

THE SURETY, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

STANDARD FORM OF AGREEMENT

STATE OF TEXAS

COUNTY OF _____ }

THIS AGREEMENT, made and entered into this _____ day of _____, 2022, by and between City of Temple of the County of Bell and State of Texas, acting through _____ thereunto duly authorized so to do, Party of the First Part, hereinafter termed OWNER, and _____ of the City of _____, County of _____ and State of _____, Party of the Second Part, Hereinafter termed CONTRACTOR.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the Party of the First Part (OWNER), and under the conditions expressed in the bond bearing even date herewith, the said Party of the Second Part (CONTRACTOR), hereby agrees with the said Party of the First Part (OWNER) to commence and complete the construction of certain improvements described as follows:

City of Temple
Avenue G Pump Station Improvements

and all extra work in connection therewith, under the terms as stated in the General Conditions of the Agreement and at his (or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said construction, in accordance with the conditions and prices stated in the Proposal attached hereto, and in accordance with the Notice to Contractors, General and Special Conditions of Agreement, Plans and other drawings and printing or written explanatory matter thereof, and the Specifications and addenda therefor, as prepared by Kasberg, Patrick & Associates, LP; 19 North Main Street; Temple, Texas 76501, herein entitled the ENGINEER, each of which has been identified by the CONTRACTOR and the ENGINEER, together with the CONTRACTOR'S written Proposal, the General Conditions of the Agreement, and the Performance and Payment Bonds hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire contract.

The CONTRACTOR agrees to commence work within ten (10) days after the date written notice to do so shall have been given him, and to complete construction as required in the contract, subject to such extensions of time as are provided by the General and Special Conditions.

The OWNER agrees to pay the CONTRACTOR in current funds the price or prices shown in the proposal, which forms a part of this contract, such payments to be subject to the General and Special Conditions of the contract.

IN WITNESS WHEREOF, the parties to these presents have executed this Agreement in the year and day first above written.

City of Temple
Party of the First Part (OWNER)

By:_____
Title:_____

ATTEST:

_____

_____
Party of the Second Part (CONTRACTOR)

By:_____
Title:_____

ATTEST:

_____

APPROVED AS TO FORM:

_____

PERFORMANCE BOND

[Public Works]

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS, That _____ a Texas _____, whose address is _____; as Principal, and _____, whose address is _____, a corporation organized and existing under the laws of the State of Texas, as Surety, are held firmly bound unto the City of Temple as Obligee, in the amount of _____ _____ ($_____) for the payment of which sum we will bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____, 2022, for the construction of the

City of Temple
Avenue G Pump Station Improvements

specifically including in the scope of this work the bond, the additional guaranty provisions set forth in the contract conditions, which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein, as well as Principal's primary obligation to perform according to the plans and specifications.

NOW, THEREFORE, the condition of this obligation is such, that if the said Principal shall faithfully perform the work in accordance with the plans, specifications, instructions to bidders, general and special conditions and other contract documents and shall fully indemnify and save harmless Obligee from all costs and damage which Obligee may suffer by reason of Principal's default, and reimburse and repay Obligee all outlay and expense which Obligee may incur in making good such default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to Chapter 2253 of the Texas Government Code, as amended, and all liabilities on this bond shall be determined in accordance with the provisions of such statute, to the same extent as if it were copied at length herein.

PROVIDED further that if any legal action be filed on this bond, venue shall be in Bell County, Texas.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder, or the plans, specifications, or drawings accompanying the same, or any assignment of the contract as may be provided for in the instructions to bidders, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, assignment thereof, or to the work to be performed thereunder. The Surety is responsible for additional amounts authorized by any change orders.

IN WITNESS WHEREOF, this instrument has been executed by the duly authorized representatives of the Principal and the Surety.

Signed and sealed this ____ day of _____, 2022.

Principal:_____

By: _____

_____(Title)

Surety:_____

By: _____

TDI Company Number: _____

The name and address of the Resident Agent of Surety is:

_____

_____

_____

Note: Attach Power of Attorney and Required Notices Rider

PAYMENT BOND

[Public Works]

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS, That _____ a Texas _____, whose address is _____; as Principal, and _____, whose address is _____, a corporation organized and existing under the laws of the State of Texas, as Surety, are held firmly bound unto the City of Temple as Obligee, in the amount of _____ _____ _____($_____) for the payment of which sum we will bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____, 2022, for the construction of the

City of Temple
Avenue G Pump Station Improvements

specifically including in the scope of this work the bond, the additional guaranty provisions set forth in the contract conditions, which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, That if the said Principal shall well and faithfully make payment to each and every claimant (as defined in Chapter 2253, Texas Government Code, as amended) supplying labor or materials to it in the prosecution of the work provided for in said contract, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED further that if any legal action be filed on this bond, venue shall be in Bell County, Texas.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code, as currently amended, and all liabilities on this bond shall be determined in accordance with the provisions of said statute to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder, or the plans, specifications, or drawings accompanying the same, or any assignment of the contract as may be provided for in the instructions to bidders, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, assignment thereof, or to the work to be performed thereunder. The Surety is responsible for additional amounts authorized by any change orders.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on the _____ day of _____, 2022.

Principal:_____

By: _____

_____(Title)

Surety: _____

By: _____

TDI Company Number:_____

The name and address of the Resident Agent of Surety is:

_____

_____

_____

Note: Attach Power of Attorney and Required Notices Rider

CERTIFICATE OF INSURANCE

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

NAME AND ADDRESS OF AGENCY

NAME AND ADDRESS OF INSURED

COMPANIES AFFORDING COVERAGES

COMPANY A
LETTER

COMPANY B
LETTER

COMPANY C
LETTER

COMPANY D
LETTER

COMPANY E
LETTER

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time. Not withstanding 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.

COMPANY LETTER	TYPE OF INSURANCE	POLICY NUMBER	POLICY EXPIRATION DATE	LIMITS OF LIABILITY IN THOUSANDS (000)		
					EACH OCCURRENCE	AGGREGATE
____	GENERAL LIABILITY ____ **Comprehensive Form** Premises-Operations ____ Explosions and **Collapse Hazard** __ Underground Hazard ____ Products/Completed Operations Hazard ____ Contractual Insurance __ Broad Form Property Damage __ Independent Contractors ____ Personal Injury			Bodily Injury	$	$
				Property Damage	$	$
				Bodily Injury and Property Damage Combined	$	$
				Personal Injury		$

____	AUTOMOBILE LIABILITY __ Comprehensive Form __ Owned __ Hired __ Non-Owned			Bodily Injury (Each Person)		$
				Bodily Injury (Each Accident)		$
				Property Damage		$
				Bodily Injury and Property Damage Combined		$
_____	EXCESS LIABILITY __ Umbrella Form __ Other than Umbrella					
_____	WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY			Statutory		
						$ (Each Account)

OTHER

Builders Risk

Description of Operations/
Locations/Vehicles

PROJECT TITLE: **Avenue G Pump Station Improvements**

PROJECT LOCATION: **Temple, Texas**

City of Temple is named as an additional insured under all insurance, other than Workman's Compensation.

Cancellation: No policies will be cancelled or reduced, restricted, or limited until ten (10) days after the owner has received written notice as evidence by return receipt or registered or certified letter.

NAME AND ADDRESS OF CERTIFICATE HOLDER:

_____

DATE ISSUED:_____, 2022

_____
AUTHORIZED REPRESENTATIVE

END OF SECTION

Notice of Award

Date: _____

Project: **Avenue G Pump Station Improvements**	
Owner: **City of Temple**	Engineer's Project No.: 2021-117-40
Contract: **Avenue G Pump Station Improvements**	
Bidder: Matous Construction, Ltd.	
Bidder's Address: 8602 State Highway 317	
Belton, TX, 76513	

You are notified that your Bid dated September 28, 2022 for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for:

Avenue G Pump Station Improvements

The Total Amount of your Contract is Seven million, seven hundred and ninety seven dollars and no cents ($7,797,000.00).

5 copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

5 sets of the Drawings will be delivered separately or otherwise made available to you upon acceptance of Contract Documents by the Owner.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Engineer [5] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders, General Conditions), and Supplementary Conditions.
3. Other conditions precedent:

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

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

By: _____

_____

Notice to Proceed

Date: _____

Contract: **Avenue G Pump Station Improvements**

Engineer's Project No.: 2021-117-40

To: _____

_____

_____

In accordance with the Agreement dated _____, by and between the City of Temple (Owner) and _____ _____ (Contractor) for work to be performed in conjunction with the **Avenue G Pump Station Improvements**.

Construction shall be completed within _____ of the issuance of this Notice to Proceed.

1. Contractor is hereby notified to commence work on _____, 2022 and to complete the work on or before _____, 20 23 .

2. Liquidated damages to be paid by the Contractor for failure to complete the work by the completion date will be assessed at the rate of $ 500.00 per day for each calendar day after _____, 20 23 . The procedure and basis for the assessment of damages will be in accordance with the Special Conditions, Section 21.

ISSUED ON BEHALF OF	ACCEPTED ON BEHALF OF
City of Temple	_____
_____	_____ (Contractor Signature)
_____ Date	_____ Date

GENERAL CONDITIONS

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FOR

GENERAL CONDITIONS OF AGREEMENT

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GENERAL CONDITIONS OF AGREEMENT

1. DEFINITIONS OF TERMS

1.01 ... OWNER, CONTRACTOR AND ENGINEER. The OWNER, the CONTRACTOR and the ENGINEER are those persons or organizations identified as such in the Agreement and are referred to throughout the Contract Documents as if singular in number and masculine in gender. The term ENGINEER means the ENGINEER or his duly authorized representative. The ENGINEER shall be understood to be the ENGINEER of the OWNER, and nothing contained in the Contract Documents shall create any contractual or agency relationship between the ENGINEER and the CONTRACTOR.

1.02 ... CONTRACT DOCUMENTS. The Contract Documents shall consist of the Notice to Contractors (Advertisement), Special Conditions (Instructions to Bidders), Proposal, signed Agreement, Performance and Payment Bonds (when required), Special Bonds (when required), General Conditions of the Agreement, Technical Specifications, Plans, and all modifications thereof incorporated in any of the documents before the execution of the agreement.

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. In case of conflict between any of the Contract Documents, priority of interpretation shall be in the following order: Signed Agreement, Performance and Payment Bonds, Special Bonds (if any), Proposal, Special Conditions of Agreement, Notice to Contractors, Technical Specifications, Plans, and General Conditions of Agreement.

1.03 ... SUB-CONTRACTOR. The term Sub-Contractor, as employed herein, includes only those having a direct contract with the CONTRACTOR and it includes one who furnishes material worked to a special design according to the plans or specifications of this work, but does not include one who merely furnishes material not so worked.

1.04 ... WRITTEN NOTICE. Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

1.05 ... WORK. The CONTRACTOR shall provide and pay for all materials, supplies, machinery, equipment, tools, superintendence, labor, services, insurance, and all water, light, power, fuel, transportation and other facilities necessary for the execution and completion of the work covered by the Contract Documents. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of a good quality. The CONTRACTOR shall, if required, furnish satisfactory evidence as to the kind and quality of materials. Materials or work described in words, which so applied, have a well-known technical or trade meaning shall be held to refer to such recognized standards.

1.06 ... EXTRA WORK. The term “Extra Work” as used in this contract shall be understood to mean and include all work that may be required by the ENGINEER or OWNER to be done by the CONTRACTOR to accomplish any change, alteration or addition to the work shown upon the plans, or reasonably implied by the specifications, and not covered by the CONTRACTOR’S Proposal, except as provided under “Changes and Alterations”, herein.

1.07 ... WORKING DAY. A "Working Day" is defined as any day not including Saturdays, Sundays or any legal holidays, in which weather or other conditions, not under the control of the CONTRACTOR, will permit construction of the principal units of the work for a period of not less than seven (7) hours between 7:00 a.m. and 6:00 p.m.

1.08 ... CALENDAR DAY. "Calendar Day" is any day of the week or month, no days being excepted.

1.09 ... SUBSTANTIALLY COMPLETED. By the term "substantially completed" is meant that the structure has been made suitable for use or occupancy or the facility is in condition to serve its intended purpose, but still may require minor miscellaneous work and adjustment.

2. RESPONSIBILITIES OF THE ENGINEER AND THE CONTRACTOR

2.01 ... OWNER - ENGINEER RELATIONSHIP. The ENGINEER will be the OWNER'S representative during construction. The duties, responsibilities and limitations of authority of the ENGINEER as the OWNER'S representative during construction are as set forth in the Contract Documents and shall not be extended or limited without written consent of the OWNER and ENGINEER. The ENGINEER will advise and consult with the OWNER, and all of OWNER'S instructions to the CONTRACTOR shall be issued through the ENGINEER.

2.02 ... PROFESSIONAL INSPECTION BY ENGINEER. The ENGINEER shall make periodic visits to the site to familiarize himself generally with the progress of the executed work and to determine if such work generally meets the essential performance and design features and the technical and functional engineering requirements of the Contract Documents; provided and except, however, that the ENGINEER shall not be responsible for making any detailed, exhaustive, comprehensive or continuous on-site inspection of the quality or quantity of the work or be in any way responsible, directly or indirectly, for the construction means, methods, techniques, sequences, quality, procedures, programs, safety precautions or lack of same incident thereto or in connection therewith. Notwithstanding any other provision of this agreement or any other Contract Document, the ENGINEER shall not be in any way responsible or liable for any acts, errors, omissions or negligence of the CONTRACTOR, any subcontractor or any of the CONTRACTOR'S or subcontractor's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

2.03 ... PAYMENTS FOR WORK. The ENGINEER shall review CONTRACTOR'S applications for payment and supporting data, determine the amount owed to the CONTRACTOR and approve, in writing, payment to CONTRACTOR in such amounts; such approval of payment to CONTRACTOR constitutes a representation to the OWNER of ENGINEER'S professional judgment that the work has progressed to the point indicated to the best of his knowledge, information and belief, but such approval of an application for payment to CONTRACTOR shall not be deemed as a representation by ENGINEER that ENGINEER has made any examination to determine how or for what purpose CONTRACTOR has used the moneys paid on account of the Contract price.

2.04 ... INITIAL DETERMINATIONS. The ENGINEER initially shall determine all claims, disputes and other matters in question between the CONTRACTOR and the OWNER

relating to the execution or progress of the work or the interpretation of the Contract Documents and the ENGINEER'S decision shall be rendered in writing within a reasonable time. Should the ENGINEER fail to make such decision within a reasonable time, appeal to arbitration may be taken as if his decision had been rendered against the party appealing.

2.05 ... OBJECTIONS. In the event the ENGINEER renders any decision which, in the opinion of either party hereto, is not in accordance with the meaning and intent of this contract, either party may file with the ENGINEER within thirty days his written objection to the decision, and by such action may reserve the right to submit the question so raised to arbitration as hereinafter provided.

2.06 ... LINES AND GRADES. Unless otherwise specified, all lines and grades shall be furnished by the ENGINEER or his representative. Whenever necessary, construction work shall be suspended to permit performance of this work, but such suspension will be as brief as practicable and the CONTRACTOR shall be allowed no extra compensation therefor. The CONTRACTOR shall give the ENGINEER ample notice of the time and place where lines and grades will be needed. All stakes, marks, etc., shall be carefully preserved by the CONTRACTOR, and in case of careless destruction or removal by him or his employees, such stakes, marks, etc., shall be replaced at the CONTRACTOR'S expense.

2.07 ... CONTRACTOR'S DUTY AND SUPERINTENDENCE. The CONTRACTOR shall give adequate attention to the faithful prosecution and completion of this contract and shall keep on the work, during its progress, a competent superintendent and any necessary assistants. The superintendent shall represent the CONTRACTOR in his absence and all directions given to him shall be as binding as if given to the CONTRACTOR.

The CONTRACTOR is and at all times shall remain an independent contractor, solely responsible for the manner and method of completing his work under this contract, with full power and authority to select the means, method and manner of performing such work, so long as such methods do not adversely affect the completed improvements, the OWNER and ENGINEER being interested only in the result obtained and conformity of such completed improvements to the plans, specifications and contract.

Likewise, the CONTRACTOR shall be solely responsible for the safety of himself, his employees and other persons, as well as for the protection of the safety of the improvements being erected and the property of himself or any other person, as a result of his operations hereunder. Engineering construction drawings and specifications as well as any additional information concerning the work to be performed passing from or through the ENGINEER shall not be interpreted as requiring or allowing CONTRACTOR to deviate from the plans and specifications, the intent of such drawings, specifications and any other such instructions being to define with particularity the agreement of the parties as to the work the CONTRACTOR is to perform. CONTRACTOR shall be fully and completely liable, at his own expense, for design, construction, installation and use, or non-use of all items and methods incident to performance of the contract, and for all loss, damage or injury incident thereto, either to person or property, including, without limitation, the adequacy of all temporary supports, shoring, bracing, scaffolding, machinery or equipment, safety precautions or devices, and similar items or devices used by him during construction.

Any review of work in process, or any visit or observation during construction, or any clarification of plans and specifications, by the ENGINEER, or any agent, employee, or representative of either of them, whether through personal observation on the project site or by

means of approval of shop drawings for temporary construction on construction processes, or by other means or method, is agreed by the CONTRACTOR to be for the purpose of observing the extent and nature of work completed or being performed, as measured against the drawings and specifications constituting the contract, or for the purpose of enabling CONTRACTOR to more fully understand the plans and specifications so that the completed construction work will conform thereto, and shall in no way relieve the CONTRACTOR from full and complete responsibility for the proper performance of his work on the project, including but without limitation the propriety of means and methods of the CONTRACTOR in performing said contract, and the adequacy of any designs, plans or other facilities for accomplishing such performance. Deviation by the CONTRACTOR from plans and specifications that may have been in evidence during any such visitation or observation by the ENGINEER, or any of his representatives, whether called to the CONTRACTOR'S attention or not shall in no way relieve CONTRACTOR from his responsibility to complete all work in accordance with said plans and specifications.

2.08 ... CONTRACTOR'S UNDERSTANDING. It is understood and agreed that the CONTRACTOR has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agent or employee of the OWNER or ENGINEER either before or after the execution of this contract, shall affect or modify any of the terms or obligations herein contained.

2.09 ... CHARACTER OF WORKMEN. The CONTRACTOR agrees to employ only orderly and competent men, skillful in the performance of the type of work required under this contract, to do the work; and agrees that whenever the ENGINEER shall inform him in writing that any man or men on the work are, in his opinion, incompetent, unfaithful or disorderly, such man or men shall be discharged from the work and shall not again be employed on the work without the ENGINEER'S written consent.

2.10 ... CONTRACTOR'S BUILDINGS. The building of structures for housing men, or the erection of tents or other forms of protection, will be permitted only at such places as the ENGINEER shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a manner satisfactory to the ENGINEER.

2.11 ... SANITATION. Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained by the CONTRACTOR in such a manner and at such points as shall be approved by the ENGINEER, and their use shall be strictly enforced.

2.12 ... SHOP DRAWINGS. The CONTRACTOR shall submit to the ENGINEER, with such promptness as to cause no delay in his own work or in that of any other Contractor, four checked copies, unless otherwise specified, of all shop and/or setting drawings and schedules required for the work of the various trades, and the ENGINEER shall pass upon them with reasonable promptness, making desired corrections. The CONTRACTOR shall make any corrections required by the ENGINEER; file with him two corrected copies and furnish such other copies as may be needed. The ENGINEER'S approval of such drawings or schedules shall not relieve the CONTRACTOR from responsibility for deviations from drawings or specifications, unless he has in writing called the ENGINEER'S attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop

drawings or schedules. It shall be the CONTRACTOR'S responsibility to fully and completely review all shop drawings to ascertain their effect on his ability to perform the required contract work in accordance with the plans and specifications and within the contract time.

Such review by the ENGINEER shall be for the sole purpose of determining the sufficiency of said drawings or schedules to result in finished improvements in conformity with the plans and specifications, and shall not relieve the CONTRACTOR of his duty as an independent contractor as previously set forth, it being expressly understood and agreed that the ENGINEER does not assume any duty to pass upon the propriety or adequacy of such drawings or schedules, or any means or methods reflected thereby, in relation to the safety of either person or property during CONTRACTOR'S performance hereunder.

2.13 ... PRELIMINARY APPROVAL. The ENGINEER shall not have the power to waive the obligations of this contract for the furnishing by the CONTRACTOR of good material, and of his performing good work as herein described, and in full accordance with the plans and specifications. No failure or omission of the ENGINEER to discover, object to or condemn any defective work or material shall release the CONTRACTOR from the obligations to fully and properly perform the contract, including without limitations, the obligation to at once tear out, remove and properly replace the same at any time prior to final acceptance upon the discovery of said defective work or material; provided, however, that the ENGINEER shall, upon request of the CONTRACTOR, inspect and accept or reject any material furnished, and in event the material has been once accepted by the ENGINEER, such acceptance shall be binding on the OWNER, unless it can be clearly shown that such material furnished does not meet the specifications for this work.

Any questioned work may be ordered taken up or removed for re-examination, by the ENGINEER, prior to final acceptance, and if found not in accordance with the specifications for said work, all expense of removing, re-examination and replacement shall be borne by the CONTRACTOR, otherwise the expense thus incurred shall be allowed as EXTRA WORK, and shall be paid for by the OWNER; provided that, where inspection or approval is specifically required by the specifications prior to performance of certain work, should the CONTRACTOR proceed with such work without requesting prior inspection or approval he shall bear all expense of taking up, removing, and replacing this work if so directed by the ENGINEER.

2.14 ... DEFECTS AND THEIR REMEDIES. It is further agreed that if the work of any part thereof, or any material brought on the site of the work for use in the work or selected for the same, shall be deemed by the ENGINEER as unsuitable or not in conformity with the specifications, the CONTRACTOR shall, after receipt of written notice thereof from the ENGINEER, forthwith remove such material and rebuild or otherwise remedy such work so that it shall be in full accordance with this contract.

2.15 ... CHANGES AND ALTERATIONS. The CONTRACTOR further agrees that the OWNER may make such changes and alterations as the OWNER may see fit, in the line, grade, form, dimensions, plans or materials for the work herein contemplated, or any part thereof, either before or after the beginning of the construction, without affecting the validity of this contract and the accompanying Performance and Payment Bonds.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with, except as provided for unit price items under Section 5 "Measurement and Payment." If the amount of work is increased, and the work can fairly be classified under the

specifications, such increase shall be paid for according to the quantity actually done and at the unit price, if any, established for such work under this contract, except as provided for unit price items under Section 5 "Measurement and Payment;" otherwise, such additional work shall be paid for as provided under Extra Work. In case the OWNER shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then the OWNER shall recompense the CONTRACTOR for any material or labor so used, and for any actual loss occasioned by such change, due to actual expenses incurred in preparation for the work as originally planned.

3. GENERAL OBLIGATIONS AND RESPONSIBILITIES

3.01 ... KEEPING OF PLANS AND SPECIFICATIONS ACCESSIBLE. The ENGINEER shall furnish the CONTRACTOR with an adequate and reasonable number of copies of all plans and specifications without expense to him, and the CONTRACTOR shall keep one copy of the same constantly accessible on the work, with the latest revisions noted thereon.

3.02 ... OWNERSHIP OF DRAWINGS. All drawings, specifications and copies thereof furnished by the ENGINEER shall not be reused on other work, and, with the exception of the signed contract sets, are to be returned to him on request, at the completion of the work. All models are the property of the OWNER.

3.03 ... ADEQUACY OF DESIGN. It is understood that the OWNER believes it has employed competent engineers and designers. It is, therefore, agreed that the OWNER shall be responsible for the adequacy of the design, sufficiency of the Contract Documents, the safety of the structure and the practicability of the operations of the completed project; provided the CONTRACTOR has complied with the requirements of the said Contract Documents, all approved modifications thereof, and additions and alterations thereto approved in writing by the OWNER. The burden of proof of such compliance shall be upon the CONTRACTOR to show that he has complied with the said requirements of the Contract Documents, approved modifications thereof and all approved additions and alterations thereto.

3.04 ... RIGHT OF ENTRY. The OWNER reserves the right to enter the property or location on which the works herein contracted for are to be constructed or installed, by such agent or agents as he may elect, for the purpose of inspecting the work, or for the purpose of constructing or installing such collateral work as said OWNER may desire.

3.05 ... COLLATERAL CONTRACTS. The OWNER agrees to provide by separate contract or otherwise, all labor and material essential to the completion of the work specifically excluded from this contract, in such manner as not to delay the progress of the work, or damage said CONTRACTOR, except where such delays are specifically mentioned elsewhere in the Contract Documents.

3.06 ... DISCREPANCIES AND OMISSIONS. It is further agreed that it is the intent of this contract that all work must be done and all material must be furnished in accordance with the generally accepted practice, and in the event of any discrepancies between the separate contract documents, the priority of interpretation defined under "Contract Documents" shall govern. In the event that there is still any doubt as to the meaning and intent of any portion of

the contract, specifications or drawings, the ENGINEER shall define which is intended to apply to the work.

3.07 ... EQUIPMENT, MATERIALS AND CONSTRUCTION PLANT. The CONTRACTOR shall be responsible for the care, preservation, conservation, and protection of all materials, supplies, machinery, equipment, tools, apparatus, accessories, facilities, all means of construction, and any and all parts of the work, whether the CONTRACTOR has been paid, partially paid, or not paid for such work, until the entire work is completed and accepted.

3.08 ... DAMAGES. In the event the CONTRACTOR is damaged in the course of the completion of the work by the act, neglect, omission, mistake or default of the OWNER, or of the ENGINEER, or of any other CONTRACTOR employed by the OWNER upon the work, thereby causing loss to the CONTRACTOR, the OWNER agrees that he will reimburse the CONTRACTOR for such loss. In the event the OWNER is damaged in the course of the work by the act, negligence, omission, mistake or default of the CONTRACTOR, or should the CONTRACTOR unreasonably delay the progress of the work being done by others on the job so as to cause loss for which the OWNER becomes liable, then the CONTRACTOR shall reimburse the OWNER for such loss.

3.09 ... PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC. The CONTRACTOR shall at all times exercise reasonable precautions for the safety of employees and others on or near the work and shall comply with all applicable provisions of Federal, State, and Municipal safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America except where incompatible with Federal, State, or Municipal laws or regulations. The CONTRACTOR shall provide such machinery guards, safe walkways, ladders, bridges, gangplanks, and other safety devices. The safety precautions actually taken and their adequacy shall be the sole responsibility of the CONTRACTOR, acting at his discretion as an independent contractor.

3.10 ... PERFORMANCE AND PAYMENT BONDS. Unless otherwise specified, it is further agreed by the parties to this Contract that the CONTRACTOR will execute separate performance and payment bonds, each in the sum of one hundred percent (100%) of the total contract price, in standard forms for this purpose, guaranteeing faithful performance of the work and the fulfillment of any guarantees required, and further guaranteeing payment to all persons supplying labor and materials or furnishing him any equipment in the execution of the Contract, and it is agreed that this contract shall not be in effect until such performance and payment bonds are furnished and approved by the OWNER.

Unless otherwise approved in writing by the OWNER, the surety company underwriting the bonds shall be acceptable according to the latest list of companies holding certificates of authority from the Secretary of the Treasury of the United States.

Unless otherwise specified, the cost of the premium for the performance and payment bonds shall be included in the CONTRACTOR'S proposal.

3.11 ... LOSSES FROM NATURAL CAUSES. Unless otherwise specified, all loss or damage to the CONTRACTOR arising out of the nature of the work to be done, or from the action of the elements, or from any unforeseen circumstance in the prosecution of the same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the work, shall be sustained and borne by the CONTRACTOR at his own cost and expense.

3.12 ... PROTECTION OF ADJOINING PROPERTY. The said CONTRACTOR shall take proper means to protect the adjacent or adjoining property or properties in any way encountered, which might be injured or seriously affected by any process of construction to be undertaken under this Agreement, from any damage or injury by reason of said process of construction; and he shall be liable for any and all claims for such damage on account of his failure to fully protect all adjoining property. The CONTRACTOR agrees to indemnify, save and hold harmless the OWNER and ENGINEER against any claim or claims for damages due to any injury to any adjacent or adjoining property, arising or growing out of the performance of the contract; but any such indemnity shall not apply to any claim of any kind arising out of the existence or character of the work.

3.13 ... PROTECTION AGAINST CLAIMS OF SUB-CONTRACTORS, LABORERS, MATERIALMEN AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES. The CONTRACTOR agrees that he will indemnify and save the OWNER and ENGINEER harmless from all claims growing out of the lawful demands of sub-contractors, laborers, workmen, mechanics, materialmen and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. When so desired by the OWNER, the CONTRACTOR shall furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged or waived. If the CONTRACTOR fails so to do, then the OWNER may at the option of the CONTRACTOR either pay directly any unpaid bills, of which the OWNER has written notice, or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished at all liabilities have been fully discharged, whereupon payments to the CONTRACTOR shall be resumed in full, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon the OWNER by either the CONTRACTOR or his Surety.

3.14 ... PROTECTION AGAINST ROYALTIES OR PATENTED INVENTION. The CONTRACTOR shall pay all royalties and license fees, and shall provide for the use of any design, device, material or process covered by letters patent or copyright by suitable legal agreement with the patentee or owner. The CONTRACTOR shall defend all suits or claims for infringement of any patent or copyright rights and shall indemnify and save the OWNER and ENGINEER harmless from any loss on account thereof, except that the OWNER shall defend all such suits and claims and shall be responsible for all such loss when a particular design, device, material or process or the product of a particular manufacturer or manufacturers is specified or required by the OWNER; provided however, if choice of alternate design, device, material or process is allowed to the CONTRACTOR, the CONTRACTOR shall indemnify and save OWNER harmless from any loss on account thereof. If the material or process specified or required by the OWNER is an infringement, the CONTRACTOR shall be responsible for such loss unless he promptly gives such information the OWNER.

3.15 ... LAWS AND ORDINANCES. The CONTRACTOR shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations, which in any manner affect the contract or the work, and shall indemnify and save harmless the OWNER and ENGINEER against any claim arising from the violation of any such laws, ordinances, and regulations whether by the CONTRACTOR or his employees, except where such violations are called for by the provisions of the Contract Documents. If the CONTRACTOR observes that the plans and specifications are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the CONTRACTOR performs any work knowing it to be contrary to such laws,

ordinances, rules and regulations, and without such notice to the ENGINEER, he shall bear all costs arising therefrom. In case the OWNER is a body politic and corporate, the law from which it derives its powers, insofar as the same regulates the objects for which, or the manner in which, or the conditions under which the OWNER may enter into contract, shall be controlling, and shall be considered as part of this contract, to the same effect as though embodies herein.

3.16 ... ASSIGNMENT AND SUBLETTING. The CONTRACTOR further agrees that he will retain personal control and will give his personal attention to the fulfillment of this contract and that he will not assign by Power of Attorney, or otherwise, or sublet said contract without the written consent of the ENGINEER, and that no part or feature of the work will be sublet to anyone objectionable to the ENGINEER or the OWNER. The CONTRACTOR further agrees that the subletting of any portion or feature of the work, or materials required in the performance of this contract, shall not relieve the CONTRACTOR from his full obligations to the OWNER, as provided by this Agreement.

3.17 ... INDEMNIFICATION. The CONTRACTOR shall defend, indemnify and hold harmless the OWNER and the ENGINEER and their respective officers, agents and employees, from and against all damages, claims, losses, demands, suits, judgments and costs, including reasonable attorneys' fees and expenses, arising out of or resulting from the performance of the work, provided that any such damages, claim, loss, demand, suit, judgment, cost or expense:

.....(1) . . . is attributable to bodily injury, sickness, disease or death or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom; and

.....(2) . . . is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any one of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

The obligation of the CONTRACTOR under this Paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, drawings, reports, surveys, Change Orders, designs or specifications, or the giving of or the failure to give directions or instructions by the ENGINEER, his agents or employees, provided such giving or failure to give is the primary cause of the injury or damage.

3.18 ... INSURANCE. The CONTRACTOR at his own expense shall purchase, maintain and keep in force such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.....(1) . . . Workmen's compensation claims, disability benefits and other similar employee benefit acts;

.....(2) . . . Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees, and claims insured by usual bodily injury liability coverages;

.....(3) . . . Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees, and claims insured by usual bodily injury liability coverages; and

.....(4) . . . Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

3.18.1 ... CERTIFICATE OF INSURANCE. Before commencing any of the work, CONTRACTOR shall file with the OWNER valid Certificates of Insurance acceptable to the OWNER and the ENGINEER. Such Certificates shall contain a provision that coverages afforded under the policies will not be canceled until at least fifteen days' prior written notice has been given to the OWNER.

The CONTRACTOR shall also file with the OWNER valid Certificates of Insurance covering all sub-contractors.

4. PROSECUTION AND PROGRESS

4.01 ... TIME AND ORDER OF COMPLETION. It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the CONTRACTOR shall be allowed to prosecute his work at such times and seasons, in such order of precedence, and in such manner as shall be most conducive to economy of construction: provided, however, that the order and the time of prosecution shall be such that the work shall be substantially completed as a whole and in part, in accordance with this contract, the plans and specifications, and within the time of completion designated in the Proposal; provided, also, that when the OWNER is having other work done, either by contract or by his own force, the ENGINEER may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the construction of the various works being done for the OWNER shall be harmonized.

The CONTRACTOR shall submit, at such times as may reasonably be requested by the ENGINEER schedules which shall show the order in which the CONTRACTOR proposes to carry on the work, with dates at which the CONTRACTOR will start the several parts of the work, and estimated dates of completion of the several parts.

4.02 ... EXTENSION OF TIME. Should the CONTRACTOR be delayed in the completion of the work by any act or neglect of the OWNER or ENGINEER, or of any employee of either, or by other contractors employed by the OWNER, or by changes ordered in the work, or by strikes, lockouts, fires, and unusual delays by common carriers, or unavoidable cause or causes beyond the CONTRACTOR'S control, or by any cause which the ENGINEER shall decide justifies the delay, then an extension of time shall be allowed for completing the work, sufficient to compensate for the delay, the amount of the extension to be determined by the ENGINEER, provided, however, that the CONTRACTOR shall give the ENGINEER prompt notice in writing of the cause of such delay.

4.03 ... HINDRANCES AND DELAYS. No claims shall be made by the CONTRACTOR for damages resulting from hindrances or delays from any cause (except where the work is stopped by order of the OWNER) during the progress of any portion of the work embraced in this contract. In case said work shall be stopped by the act of the OWNER, then

such expense as in the judgment of the ENGINEER is caused by such stoppage of said work shall be paid by the OWNER to the CONTRACTOR.

5. MEASUREMENT AND PAYMENT

5.01 ... QUANTITIES AND MEASUREMENTS. No extra or customary measurements of any kind will be allowed, but the actual measured and/or computed length, area, solid contents, number and weight only shall be considered, unless specifically provided.

5.02 ... ESTIMATED QUANTITIES. This agreement, including the specifications, plans and estimate, is intended to show clearly all work to be done and material to be furnished hereunder. Where the estimated quantities are shown for the various classes of work to be done and material to be furnished under this contract, they are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that where the basis for payment under this contract is the unit price method, payment shall be for the actual amount of such work done and the material furnished.

Where payment is based on the unit price method, the CONTRACTOR agrees that he will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this contract and the estimated quantities contemplated and contained in the proposal; provided, however, that in case the actual quantity of any major item should become as much as twenty percent (20%) more than, or twenty percent (20%) less than the estimated or contemplated quantity for such items, then either party to this Agreement, upon demand, shall be entitled to a revised consideration upon the portion of the work above or below twenty percent (20%) of the estimated quantity.

A "Major Item" shall be construed to be any individual bid item incurred in the proposal that has a total cost equal to or greater than five percent (5%) of the total contract cost, computed on the basis of the proposal quantities and the contract unit prices.

Any revised consideration is to be determined by agreement between the parties, otherwise by the terms of this Agreement, as provided under "Extra Work."

5.03 ... PRICE OF WORK. In consideration of the furnishing of all the necessary labor, equipment and material, and the completion of all work by the CONTRACTOR, and on the completion of all work and of the delivery of all material embraced in this Contract in full conformity with the specifications and stipulations herein contained, the OWNER agrees to pay the CONTRACTOR the prices set forth in the Proposal hereto attached, which has been made a part of this contract. The CONTRACTOR hereby agrees to receive such prices in full for furnishing all material and all labor required for the aforesaid work, also for all expense incurred by him, and for well and truly performing the same and the whole thereof in the manner and according to this Agreement.

5.04 ... PARTIAL PAYMENTS. On or before the 10th day of each month, the CONTRACTOR shall prepare and submit to the ENGINEER for approval or modification a statement showing as completely as practicable the total value of the work done by the

CONTRACTOR up to and including the last day of the preceding month; said statement shall also include the value of all sound materials delivered on the site of the work that are to be fabricated into the work.

The OWNER shall then pay the CONTRACTOR on or before the 15th day of the current month the total amount of the approved statement, less ten percent (10%) of the amount thereof, which ten percent (10%) shall be retained until final payment, and further less all previous payments and all further sums that may be retained by the OWNER under the terms of this Agreement. It is understood, however, that in case the whole work be near to completion and some unexpected and unusual delay occurs due to no fault or neglect on the part of the CONTRACTOR, the OWNER may -- upon recommendation of the ENGINEER -- pay a reasonable and equitable portion of the retained percentage to the CONTRACTOR, or the CONTRACTOR at the OWNER'S option, may be relieved of the obligation to fully complete the work and, thereupon, the CONTRACTOR shall receive payment of the balance due him under the contract subject only to the conditions stated under "Final Payment".

5.05 ... USE OF COMPLETED PORTIONS. The OWNER shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work or such portions may not have expired but such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the work, the CONTRACTOR shall be entitled to such extra compensation, or extension of time, or both, as the ENGINEER may determine.

The CONTRACTOR shall notify the ENGINEER when, in the CONTRACTOR'S opinion, the contract is "substantially completed" and when so notifying the ENGINEER, the CONTRACTOR shall furnish to the ENGINEER in writing a detailed list of unfinished work. The ENGINEER will review the CONTRACTOR'S list of unfinished work and will add thereto such items as the CONTRACTOR has failed to include. The "substantial completion" of the structure or facility shall not excuse the CONTRACTOR from performing all of the work undertaken, whether of a minor or major nature, and thereby completing the structure or facility in accordance with the Contract Documents.

5.06 ... FINAL COMPLETION AND ACCEPTANCE. Within ten (10) days after the CONTRACTOR has given the ENGINEER written notice that the work has been completed, or substantially completed, the ENGINEER and the OWNER shall inspect the work and within said time, if the work be found to be completed or substantially completed in accordance with the Contract Documents, the ENGINEER shall issue to the OWNER and the CONTRACTOR his Certificate of Completion, and thereupon it shall be the duty of the OWNER within ten (10) days to issue a Certificate of Acceptance of the work to the CONTRACTOR or to advise the CONTRACTOR in writing of the reason for non-acceptance.

5.07 ... FINAL PAYMENT. Upon the issuance of the Certificate of Completion, the ENGINEER shall proceed to make final measurements and prepare final statement of the value of all work performed and materials furnished under the terms of the Agreement and shall certify same to the OWNER, who shall pay to the CONTRACTOR on or after the 30th day, and before the 35th day, after the date of the Certificate of Completion, the balance due the CONTRACTOR under the terms of this Agreement, provided he has fully performed his contractual obligations under the terms of this contract; and said payment shall become due in any event upon said performance by the CONTRACTOR. Neither the Certificate of Acceptance nor the final

payment, nor any provision in the Contract Documents, shall relieve the CONTRACTOR of the obligation for fulfillment of any warranty which may be required.

5.08 ... PAYMENTS WITHHELD. The OWNER may, on account of subsequently discovered evidence, withhold or nullify the whole or part of any certificate to such extent as may be necessary to protect himself from loss on account of:

.....(a) .....Defective work not remedied
.....(b).....Claims filed or reasonable evidence indicating probable filing of claims.
.....(c) .....Failure of the CONTRACTOR to make payments properly to subcontractors or for material or labor.
.....(d).....Damage to another contractor.
.....(e) .....Reasonable doubt that the work can be completed for the unpaid balance of the contract amount.
.....(f).....Reasonable indication that the work will not be completed within the contract time.

When the above grounds are removed or the CONTRACTOR provides a Surety Bond satisfactory to the OWNER, which will protect the OWNER in the amount withheld, payment shall be made for amounts withheld because of them.

5.09 ... DELAYED PAYMENTS. Should the OWNER fail to make payment to the CONTRACTOR of the sum named in any partial or final statement, when payment is due, then the OWNER shall pay to the CONTRACTOR, in addition to the sum shown as due by such statement, interest thereon at the rate of six percent (6%) per annum, unless otherwise specified, from date due as provided under "Partial Payments" and "Final Payments", until fully paid, which shall fully liquidate any injury to the CONTRACTOR growing out of such delay in payment, but the right is expressly reversed to the CONTRACTOR in the event payments be not promptly made, as provided under "Partial Payments", to at any time thereafter treat the contract as abandoned by the OWNER and recover compensation, as provided under "Abandonment of Contract", unless such payments are withheld in accordance with the provisions of "Payments Withheld".

6. EXTRA WORK AND CLAIMS

6.01 ... CHANGE ORDERS. Without invalidating this Agreement, the OWNER may, at any time or from time to time, order additions, deletions or revisions to the work; such changes will be authorized by Change Order to be prepared by the ENGINEER for execution by the OWNER and the CONTRACTOR. The Change Order shall set forth the basis for any change in contract price, as hereinafter set forth for Extra Work, and any change in contract time which may result from the change.

In the event the CONTRACTOR shall refuse to execute a Change Order which has been prepared by the ENGINEER and executed by the OWNER, the ENGINEER may in writing instruct the CONTRACTOR to proceed with the work as set forth in the Change Order and the CONTRACTOR may make claim against the OWNER for Extra Work involved therein, as hereinafter provided.

6.02 ... MINOR CHANGES. The ENGINEER may authorize minor changes in the work not inconsistent with the overall intent of the Contract Documents and not involving an increase in Contract Price. If the CONTRACTOR believes that any minor change or alteration authorized by the ENGINEER involves Extra Work and entitles him to an increase in the Contract Price, the CONTRACTOR shall make written request to the ENGINEER for a written Field Order.

In such case, the CONTRACTOR by copy of his communication to the ENGINEER or otherwise in writing shall advise the OWNER of his request to the ENGINEER for a written Field Order and that the work involved may result in an increase in the Contract Price.

Any request by the CONTRACTOR for a change in Contract Price shall be made prior to beginning the work covered by the proposed change.

6.03 ... EXTRA WORK. It is agreed that the basis of compensation to the CONTRACTOR for work either added or deleted by a Change Order for which a claim for Extra Work is made shall be determined by one or more of the following methods:

.....Method (A) - ... By agreed unit prices; or
.....Method (B) - ... By agreed lump sum; or
.....Method (C) - ...If neither Method (A) nor Method (B) be agreed upon before the Extra work is commenced, then the CONTRACTOR shall be paid the "actual field cost" of the work, plus fifteen percent (15%).

In the event said Extra Work be performed and paid for under Method (C), then the provisions of this paragraph shall apply, and the "actual field cost" is hereby defined to include the cost to the CONTRACTOR of all workmen, such as foreman, timekeepers, mechanics and laborers, and materials, supplies, teams, trucks, rentals on machinery and equipment, for the time actually employed or used on such Extra Work, plus actual transportation charges necessarily incurred, together with all power, fuel, lubricants, water and similar operating expenses, also all necessary incidental expenses incurred directly on account of such Extra Work, including Social Security, Old Age Benefits and other payroll taxes, and a rateable proportion of premiums on Performance and Payment Bonds and Maintenance Bonds, Public Liability and Property Damage and Workmen's Compensation and all other insurance as may be required by any law or ordinance or directed by the OWNER or by them agreed to. The ENGINEER may direct the form in which accounts of the "actual field cost" shall be kept and the records of these accounts shall be made available to the ENGINEER. The ENGINEER or OWNER may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment to be used; otherwise these matters shall be determined by the CONTRACTOR. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using one hundred percent (100%), unless otherwise specified, of the latest schedule of Equipment Ownership Expense adopted by the Associated General Contractors of America. Where practicable the terms and prices for the use of machinery and equipment shall be incorporated in the Written Extra Work Order. The fifteen percent (15%) of the "actual field cost" to be paid the CONTRACTOR shall cover and compensate him for his profit, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced within the "actual field cost" as herein defined, save that where the CONTRACTOR'S Camp or Field Office must be maintained primarily on account of such Extra Work; then the cost to maintain and operate the same shall be included in the "actual field cost".

No claim for Extra Work of any kind will be allowed unless ordered in writing by the ENGINEER. In case any orders or instructions, either oral or written, appear to the CONTRACTOR to involve Extra Work for which he should receive compensation or an adjustment in the construction time, he shall make written request to the ENGINEER for written order authorizing such Extra Work. Should a difference of opinion arise as to what does or does not constitute Extra Work, or as to the payment therefor, and the ENGINEER insists upon its performance, the CONTRACTOR shall proceed with the work after making written request for written order and shall keep an accurate account of the "actual field cost" thereof, as provided under Method (C). The CONTRACTOR will thereby preserve the right to submit the matter of payment to arbitration, as herein below provided.

6.04 ... TIME OF FILING CLAIMS. It is further agreed by both parties hereto that all questions of dispute or adjustment presented by the CONTRACTOR shall be in writing and filed with the ENGINEER within thirty (30) days after the ENGINEER has given any directions, order or instruction to which the CONTRACTOR desires to take exception. The ENGINEER shall reply within thirty (30) days to such written exceptions by the CONTRACTOR and render his final decision in writing. In case the CONTRACTOR should appeal from the ENGINEER'S decision, any demand for arbitration shall be filed with the ENGINEER and the OWNER in writing within ten (10) days after the date of delivery to CONTRACTOR of the ENGINEER'S final decision. It is further agreed that final acceptance of the work by the OWNER and the acceptance by the CONTRACTOR of the final payment shall be a bar to any claims by either party, except where noted otherwise in the Contract Documents.

6.05 ... ARBITRATION. All questions of dispute under this Agreement shall be submitted to arbitration at the request of either party to the dispute. The parties may agree upon one arbiter, otherwise, there shall be three, one named in writing by each party, and the third chosen by the two arbiters so selected; or if the arbiters fail to select a third within ten (10) days, he shall be chosen by a District Judge serving the County in which the major portion of the project is located, unless otherwise specified. Should the party demanding arbitration fail to name an arbiter within ten (10) days of the demand, his right to arbitrate shall lapse, and the decision of the ENGINEER shall be final and binding on him. Should the other party fail to choose an arbiter within ten (10) days, the ENGINEER shall appoint such arbiter. Should either party refuse or neglect to supply the arbiters with any papers or information demanded in writing, the arbiters are empowered by both parties to take ex parte proceedings.

The arbiters shall act with promptness. The decision of any two shall be binding on both parties to the contract. The decision of the arbiters upon any question submitted to arbitration under this contract shall be a condition precedent to any right of legal action. The decision of the arbiter or arbiters may be filed in court to carry it into effect.

The arbiters, if they deem the case demands it, are authorized to award the party whose contention is sustained, such sums as they deem proper for the time, expense and trouble incident to the appeal, and if the appeal was taken without reasonable cause, they may award damages for any delay occasioned thereby. The arbiters shall fix their own compensation, unless otherwise provided by agreement, and shall assess the cost and charges of the arbitration upon either or both parties. The award of the arbiters must be made in writing.

7. ABANDONMENT OF CONTRACT

7.01 ... ABANDONMENT BY CONTRACTOR. In case the CONTRACTOR should abandon and fail or refuse to resume work within ten (10) days after written notification from the OWNER, or the ENGINEER, or if the CONTRACTOR fails to comply with the orders of the ENGINEER, when such orders are consistent with the Contract Documents, then, and in that case, where performance and payment bonds exist, the Sureties on these bonds shall be notified in writing and directed to complete the work, and a copy of said notice shall be notified in writing and directed to complete the work, and a copy of said notice shall be delivered to the CONTRACTOR.

After receiving said notice of abandonment, the CONTRACTOR shall not remove from the work any machinery, equipment, tools, materials or supplies then on the job; but the same, together with any materials and equipment under contract for the work, may be held for use on the work by the OWNER or Surety on the performance bond, or another contractor in completion of the work; and the CONTRACTOR shall not receive any rental or credit therefor (except when used in Work and Claims), it being understood that the use of such equipment and materials will ultimately reduce the cost to complete the work and be reflected in the final settlement.

Where there is no performance bond provided or in ease the Surety should fail to commence compliance with the notice for completion herein before provided for, within ten (10) days after service of such notice, then the OWNER may provide for completion of the work in either of the following elective manners:

7.01.1 The OWNER may thereupon employ such force of men and use such machinery, equipment, tools, materials and supplies as said OWNER may deem necessary to complete the work and charge the expense of such labor, machinery, equipment, tools, materials and supplies to said CONTRACTOR, and expense so charged shall be deducted and paid by the OWNER out of such moneys as may be due, or that may thereafter at any time become due to the CONTRACTOR under and by virtue of this Agreement. In case such expense is less than the sum which would have been payable under this contract, if the same had been completed by the CONTRACTOR, then said CONTRACTOR shall receive the difference. In case such expense is greater than the sum which would have been payable under this contract, if the same had been completed by said CONTRACTOR, then the CONTRACTOR and/or his Surety shall pay the amount of such excess to the OWNER; or

7.01.2 The OWNER under sealed bids, after five (5) days' notice published one or more times in a newspaper having general circulation in the county of the location of the work, may let the contract for the completion of the work under substantially the same terms and conditions which are provided in this contract. In case any increase in cost to the OWNER under the new contract as compared to what would have been the cost under this contract, such increase shall be charged to the CONTRACTOR and Surety shall be and remain bound therefor. However, should the cost to complete any such contract prove to be less than what would have been the cost to complete under this contract, the CONTRACTOR and/or his Surety shall be credited therewith.

When the work shall have been substantially completed the CONTRACTOR and his Surety shall be so notified and Certificates of Completion and Acceptance, as provided in Paragraph 5.06 hereinabove, shall be issued. A complete itemized statement of the contract

accounts, certified to by the ENGINEER as being correct, shall then be prepared and delivered to the CONTRACTOR and his Surety, whereupon the CONTRACTOR and/or his Surety, or the OWNER as the case may be, shall pay the balance due as reflected by said statement, within fifteen (15) days after the date of such completion.

In the event the statement of accounts shows that the cost to complete the work is less than that which would have been the cost to the OWNER had the work been completed by the CONTRACTOR under the terms of this contract; or when the CONTRACTOR and/or his Surety shall pay the balance shown to be due by them to the OWNER, then all machinery, equipment, tools, materials or supplies left on the site of the work shall be turned over to the CONTRACTOR and/or his Surety. Should the cost to complete the work exceed the contract price, and the CONTRACTOR and/or his Surety fail to pay the amount due the OWNER within the time designated hereinabove, and there remains any machinery, equipment, tools materials or supplies on the site of the work, notice thereof, together with an itemized list of such equipment and materials shall be mailed to the CONTRACTOR and his Surety at the respective addresses designated in this contract, provided, however, that actual written notice given in any manner will satisfy this condition. After mailing, or other giving of such notice, such property shall be held at the risk of the CONTRACTOR and his Surety subject only to the duty of the OWNER to exercise ordinary care to protect such property. After fifteen (15) days from the date of said notice, the OWNER may sell such machinery, equipment, tools, materials or supplies and apply the net sum derived from such sale to the credit of the CONTRACTOR and his Surety. Such sale may be made at either public or private sale, with or without notice, as the OWNER may elect. The OWNER shall release any machinery, equipment, tools, materials, or supplies, which remain on the work, and belong to persons other than the CONTRACTOR or his Surety, to their proper owners. The books on all operations provided herein shall be open to the CONTRACTOR and his Surety.

7.02 ... ABANDONMENT BY OWNER. In case the OWNER shall fail to comply with the terms of this contract, and should fail or refuse to comply with said terms within ten (10) days after written notification by the CONTRACTOR, then the CONTRACTOR may suspend or wholly abandon the work, and may remove therefrom all machinery, tools and equipment, and all materials on the site of work that have not been included in payments to the CONTRACTOR and have not been wrought into the work. And thereupon the ENGINEER shall make an estimate of the total amount earned by the CONTRACTOR, which estimate shall include the value of all work actually completed by said CONTRACTOR (at the prices stated in the attached proposal where unit prices are used), the value of all partially completed work at a fair and equitable price, and the amount of all Extra Work performed at the prices agreed upon, or provided for by the terms of this contract, and a reasonable sum to cover the cost of any provisions made by the CONTRACTOR to carry the whole work to completion and which cannot be utilized. The ENGINEER shall then make a final statement of the balance due the CONTRACTOR by deducting from the above estimate all previous payments by the OWNER and all other sums that may be retained by the OWNER under the terms of this Agreement and shall certify same to the OWNER who shall pay to the CONTRACTOR on or before thirty (30) days after the date of the notification by the CONTRACTOR the balance shown by said final statement as due the CONTRACTOR, under the terms of this Agreement.

SPECIAL CONDITIONS

City of Temple

Avenue G Pump Station Improvements

SPECIAL CONDITIONS

SC.46 Lines and Grades
SC.47 Access to Project Site
SC.48 Barricades, Lights and Watchmen
SC.49 Protection of Trees and Landscaped Areas
SC.50 Lights and Power
SC.51 Water for Construction
SC.52 Trench Safety System
SC.53 Tools and Accessories
SC.54 Project Maintenance
SC.55 Fences, Improvements and Drainage Channels
SC.56 Disposal of Waste and Surplus Excavation
SC.57 Cleanup
SC.58 Archeological Discoveries
SC.59 Service of Manufacturer's Representative
SC.60 Final Field Tests
SC.61 As-Built Dimensions and Drawings

City of Temple

Avenue G Pump Station Improvements

SPECIAL CONDITIONS

SC.01 GENERAL

The provisions of this section of the specifications shall govern in the event of any conflict between them and the "General Conditions of Agreement."

SC.02 DEFINITIONS

Agreement. "Agreement" shall mean the contract document as herein set forth.
Calendar Day. "Calendar Day" shall mean any day of the week or month, no days being excepted.
Extra Work. "Extra Work" shall mean and include all work that may be required by the Owner to be done by the Contractor to accomplish any change, alteration, or addition to the work shown on the plans or reasonably implied by the specifications, and not covered by the Contractor's proposal.
Parties. The parties to this agreement are the Owner and the Contractor.
Project. "Project" shall mean the work embraced by this agreement, including the Plans and Specifications, General and Special Conditions, Performance and Payment Bonds attached hereto; generally described as follows:

Avenue G Pump Station Improvements

Subcontractor. "Subcontractor" shall mean only those having a direct contract with the Contractor for performance of work on the project contemplated by these contract documents.
Substantially Completed. "Substantially Completed" shall mean that the project contemplated by the contract documents has been made suitable for use or occupancy, or the facility is in a condition to serve its intended purpose; but still may require minor miscellaneous work and adjustment, provided, however, that final payment of the contract price including retainage, shall not be made until completion of all punch list items and upon acceptance by the Owner. Acceptance by the Owner shall not impair any warranty obligation of the Contractor.
Work. "Work" or "Scope or Work" shall mean Pump Improvements at Avenue G Pump Station as more fully described in the Scope of Work contained in SC.06.

SC.03 ENGINEER

The word "Engineer" in these specifications shall be understood as referring to Kasberg, Patrick & Associates, LP, Consulting Engineers; 19 North Main Street; Temple, Texas 76501, Engineer of the Owner, or such other representatives as may be authorized by said Owner to act in any particular position.

SC.04 LOCATION OF PROJECT

The project location is shown on the overall location maps on the plans.

SC.05 EXAMINATION OF SITE OF PROJECT

Prospective bidders shall make a careful and thorough examination of the site of the project, including all soil and water conditions to be encountered, improvements to be protected, disposal sites for surplus materials, arrangements necessary for providing ingress and egress to private properties and methods of handling traffic during prosecution of all the work involved.

SC.06 SCOPE OF WORK

The work to be performed under this contract consists of furnishing all materials, labor, supervision, tools, equipment and incidentals required, and performing all work necessary for the following:

Booster Pump Station consisting of Six (6) 200HP Horizontal Splitcase Turbine Can Pumps, Two (2) 15,000 Gallon Hydro Tanks; 25'x25' CMU Building to host Electrical Controls and Chemical Feed Systems (LAS and Chlorine Gas); Meter and Chemical Injection Vaults; Yard Piping, approximately 1,500 LF of 12" Water Line and approximately 1,500 LF of 8" Water Line.

SC.07 FORMS, PLANS AND SPECIFICATIONS

- Electronic format available via email (ccollins@kpaengineers.com) from KPA Engineers at no charge.
- Hard copies available at KPA Engineers-Georgetown; 800 South Austin Avenue; Georgetown, Texas 78626 and KPA Engineers-Temple; 19 North Main Street; Temple, Texas 76501; 254-773-3731, for a non-refundable fee of $100.00 per set, made payable to Kasberg, Patrick & Associates, LP.

SC.08 COPIES OF PLANS AND SPECIFICATIONS FURNISHED

Five (5) sets of plans and specifications shall be furnished to the successful Contractor, at no charge, for construction purposes. Additional copies may be obtained at the cost of reproduction upon request.

SC.09 PRE-BID CONFERENCE

A Non-Mandatory Pre-Bid Conference will be held at 2:00 PM, Tuesday, August 25, 2022 at the office of KPA Engineers-Temple, 19 North Main Street; Temple, Texas 76501.

SC.10 ADDENDA

Bidders desiring further information or interpretation of the plans and specifications must make a request for such information to the Engineer as outlined in this Section and in the Instructions to Bidders for Construction. Answers to all such requests will be given in writing to all Plan Holders (persons who have received plans and specifications from the Engineer) 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.

Addenda issued prior to seventy-two (72) hours before the opening of bids will be e-mailed to each Plan Holder. The proposals as submitted by the Contractor will be so constructed as to include any addenda if such are issued by the Engineer prior to twenty-four (24) hours before the opening of bids.

In order that all plan holders will have equal access to information on this project, all requests to the Engineer for information or interpretation of the plans and specifications must be received before noon on Wednesday, September 9, 2022. If there is a need to clarify any requests at that time, the Engineer will issue a written addendum within 24 hours. After noon on Wednesday, September 9, 2022, the Engineer and Owner will not address or attempt to further clarify any written or oral requests.

SC.11 PREPARATION OF PROPOSAL

The Bidder shall submit his proposal on the forms furnished. All blank spaces in the form shall be correctly filled in and the bidder shall state the price, both in words and numerals, for which he proposes to do the work contemplated or furnish the materials required. Such prices shall be written distinctly and legibly, or typewritten. In cases of discrepancy between the price written in words and the price written in figures, the price written in words shall govern. If the proposal is submitted by an individual, his name must be signed by him or his duly authorized agent. If a proposal is submitted by a firm, association, or partnership, the name and address of each member must be given and the proposal signed by a member of the firm, association or partnership, or person duly authorized. If the proposal is submitted by a company or corporation, the company or corporate name and business address must be given, and the proposal signed by an official or duly authorized agent. Powers of attorney authorizing agents or others to sign proposal must be properly certified and must be in writing and submitted with the proposal.

If proposal is emailed to the Project Engineer, proposal must be received as a Portable Data File (PDF) prior to the deadline stated in the Notice to Bidders and must include all forms and signatures. If mailed or delivered, proposal must be received prior to the deadline stated in the Notice to Bidders and enclosed in a sealed envelope, addressed as specified and endorsed on the outside of the envelope in the following manner:

a. Bidder's name.

b. Proposal for "Avenue G Pump Station Improvements"

Bid proposal may be withdrawn and resubmitted at any time prior to the time set for opening of the bids, but no proposal may be withdrawn or altered after the opening of the bids.

SC.12 ALTERNATE BIDS

Please see the bid schedule for the associated alternate bids.

SC.13 QUALIFICATION OF LOW BIDDER

Prior to award of contract, the bidder shall submit such evidence as the Owner may require to establish the bidder's qualifications to satisfactorily perform the work included in this project. Information that may be required shall include (1) the bidder's current financial statement including amount of funds readily available to commence and carry out the work, (2) a list of equipment available for this project, (3) a list of projects that of the same general type as included in this contract, together with the names, addresses and phone numbers of persons familiar with this work, and (4) other information that may be pertinent to the bidder's qualifications.

Should the bidder fail to promptly produce evidence satisfactory to the Owner on any of the foregoing points, he may be disqualified and the work awarded to the next bidder so qualifying.

SC.14 AWARD OF CONTRACT

It is the intention of the Owner to award a contract on the basis of the lowest acceptable bid submitted by a qualified bidder as determined by the Owner. The right is reserved, as the interest of the Owner may require, to reject any and all bids and to waive any informality in bids received.

The City of Temple will notify the successful bidder, in writing, within sixty (60) days of the date of receiving bids, of its acceptance of his proposal. The Contractor shall complete the execution of the required Bond and Contract within ten (10) days of such notice.

SC.15 SEQUENCE OF CONSTRUCTION

The time allotted for completion of this project is described under Section SC.16 of these Special Conditions.

Prior to beginning construction on this project, the Contractor shall prepare a written construction sequence and schedule for review by the Engineer and approval by the Owner. This construction sequence and schedule shall be followed by the Contractor unless changes are approved by the Owner.

No partial payment estimates will be issued until the Sequence and Schedule of Construction has been approved.

SC.16 TIME ALLOTTED FOR COMPLETION AND NOTICE TO PROCEED

The construction of the project shall be fully completed in 365 calendar days. The Notice to Proceed shall consist of a written request by the Engineer for the Contractor to proceed with the construction of the project.

SC.17 PRECONSTRUCTION CONFERENCE

After award of bid and prior to beginning construction, a conference will be held with representatives of the Contractor, Owner, Engineer, and the affected Utility

Companies to discuss schedules and utility conflicts in the project. The purpose is to establish lines of communication between the parties involved. The time and place for the Pre-construction Conference shall be determined at the time of Bid Award.

SC.18 CONSTRUCTION IN PUBLIC ROADS AND PRIVATE DRIVES

No public or private road shall be entirely closed overnight. It shall be the responsibility of the Contractor to build and maintain all weather bypasses and detours, if necessary, and to properly light, barricade, and mark all bypasses and detours that might be required on and across the roads involved in the work included in this contract.

The Contractor shall be responsible for repair and maintenance of all roadways damaged as a result of the construction of this project for a period of one year after completion or acceptance of the work. Within this period of one year time, if it becomes necessary for the Owner to make such repairs, the Contractor shall reimburse the Owner for the cost of such repairs.

SC.19 REFERENCE SPECIFICATIONS

Where reference is made in these specifications to specifications compiled by others, 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.

SC.20 EXTENSION OF TIME

Contractor agrees he has submitted his proposal in full recognition of the time required for the completion of this project, taking into consideration the average climatic range and material manufacturing conditions prevailing in this locality, and has considered the liquidated damage provision herein, and that he shall not be entitled to, nor will he request, an extension of time on this contract, except when his work has been delayed by an act or neglect of the Owner, employees or representatives of the Owner, or other contractors employed by the Owner, or by changes ordered in the work, or reductions thereto in writing. The Contractor may apply in writing for an extension of time, submitting therewith all written justification as may be required by the Engineer for such and extension as requested by Contractor. The Engineer, within ten (10) days after receipt of a written request for an extension of time by the Contractor, which is supported by all requested documentation, shall decide if an extension of time shall be allowed.

SC.21 LIQUIDATED DAMAGES FOR DELAY BY CONTRACTOR

The Contractor agrees that time is of the essence on this contract and that the Owner will be damaged as a result of any delay beyond the date agreed upon in the completion of all items of work herein specified and contracted for. The parties understand and agree that the actual damages will be sustained by the Owner because of such delay will be uncertain and difficult of ascertainment and it is further agreed that a reasonable estimate of the actual amount of such damages in light of the facts known to the parties at the time of execution of this contract will be Five hundred dollars ($500.00) per day. It is therefore agreed that the Owner may

withhold permanently from the Contractor's total compensation, the total sum of $500.00 per day as liquidated damages for delay for each day of delaying completion beyond the date agreed upon for completion of the items of work herein specified and contracted for (after due allowance for such extension of time as is provided for in the General Conditions of Agreement and in Paragraph SC.20).

SC.22 DAMAGES

Article 3.08 of the General Conditions of Agreement is hereby voided and replaced with the following:

In the event the Contractor is damaged in the course of the completion of the work by the neglect, or default of the Owner, or representative of the Owner, or of any other Contractor employed by the Owner upon the work, thereby causing loss to the Contractor, the Owner agrees that he will reimburse the Contractor for such loss. In the event the Owner is damaged in the course of the work by the act, negligence, omission, mistake or default of the Contractor, or should the Contractor unreasonably delay the progress of the work being done by others on the job so as to cause loss for which the Owner becomes liable, then the Contractor shall reimburse the Owner for such loss.

SC.23 OBJECTIONS AND TIME OF FILING CLAIMS

In Paragraph 6.04 of the General Conditions, add the following after the first sentence:

"Failure to file such an objection during such period shall constitute waiver thereof and consent to the decision rendered by the Engineer."

Also, delete the third sentence, which deals with arbitration.

Also, in Paragraph 2.05 of the General Conditions, delete the last clause dealing with arbitration and insert:

"Failure to file such an objection during such period shall constitute waiver thereof and consent to the decision rendered by the Engineer."

SC.24 MEDIATION

Article 6.05 of the General Conditions of Agreement is hereby voided and replaced with the following:

In an effort to resolve any conflicts that arise during the construction of the Project or following the completion of the Project, the Owner and the Contractor agree that all disputes between them arising out of or relating to this Agreement or the Project shall be submitted to nonbinding mediation unless the parties mutually agree otherwise.

The Owner and Contractor further agree to include a similar mediation provision in all agreements with their subcontractors, subconsultants, suppliers and fabricators,

thereby providing for mediation as the primary method for dispute resolution between the parties to all those agreements.

SC.25 FEES AND ROYALTIES

All fees or royalties for any patented invention, process, article, or arrangement in any manner connected with the work, or with these specifications, shall be included in the price stated in the proposal.

SC.26 INDEMNITY

Contractor agrees to and shall indemnify and hold harmless Owner, its officers, agents and employees, from and against any and all claims, losses, damages, causes of action, suits, and liability of every kind, including all expenses damages, causes of action, suits, and liability of every kind, including all expenses of litigation, court costs, and attorney's fees, for injury to or death of any person, or for damage to any property, arising out of or in connection with the work done by Contractor under this contract, regardless of whether such injuries, death or damages are caused in whole or in part by the negligence of the City of Temple.

Contractor assumes full responsibility for the work to be performed hereunder, and hereby releases, relinquishes and discharges Owner, its officers, agents and employees, from all claims, demands, and causes of action of every kind and character including the cost of defense thereof, for any injury to, including death of, person (whether they be third persons, contractor, or employees of either the parties hereto) and any loss of or damage to property (whether the same be that of either of the parties hereto or of third parties) caused by or alleged to be caused by, arising out of, or in connection with Contractor's work to be performed hereunder whether or not said claims, demands and causes of action in whole or in part are covered by insurance regardless of whether such loss, damage, or injury was caused by Owner. Owner, by this agreement does not give consent to litigation.

SC.27 LAWS TO BE OBSERVED

The Contractor shall, at his own expense, do those things necessary for the procurement of and shall procure all permits, certificates and licenses required of him by the law or governmental regulation for the performance of his work. He shall comply with all federal, state and local laws, ordinances or rules and regulations relating to the performance of his work. In addition to all other laws, ordinances and rules and regulations, these shall include any such laws, ordinances or rules and regulations relating to noise from the Contractor's operations.

SC.28 STATE AND CITY SALES TAXES

This contract is issued by an organization which qualifies for exemption provisions pursuant to Provisions of the Texas Tax Code. Sections 151.301, 151.307, 151.309 and 151.311. The Contractor must obtain a limited sales excise and use tax permit or exemption certificate which shall enable him to buy the materials to be incorporated into the work without paying the tax at the time of purchase.

SC.29 ANTITRUST

The Contractor hereby assigns to the Owner any and all claims for overcharges associated with this contract which arise under the antitrust laws of the United States, 15 U.S.C.A. Section 1, et seq, (1973).

SC.30 GUARANTY AGAINST DEFECTIVE WORK

The Contract shall indemnify the Owner against any repairs which may become necessary to any part of the work performed under each contract, arising from defective workmanship or material used therein, for a period of one (1) year from the date of final acceptance of the work, unless the technical specifications provide for another period.

Neither the Certificate of Acceptance nor any provision in the Contract Documents, nor partial or entire use, or occupancy of the premise by the Owner will constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials.

SC.31 INSURANCE

Satisfactory certificates of insurance for all coverage listed herein shall be filed with the Owner prior to starting any construction work on this contract. Insurance shall include the Owner, the Engineer and the State of Texas as additional insured parties.

Workmen's Compensation and Employer's Liability

This insurance shall protect Contractor against all claims under applicable state workmen's compensation laws. Contractor shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workmen's compensation law. This policy shall include an "all states" endorsement.

The liability limits shall not be less than:

Workmen's Compensation	Statutory
Employer's Liability	$100,000 each occurrence

Comprehensive Automobile Liability

This insurance shall be written in comprehensive form and shall protect Contractor against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off site of all motor vehicles licensed for highway use, whether they are owned, non-owned, or hired.

The liability limits shall not be less than:

Bodily Injury	$250,000 each person $500,000 each occurrence $1,000,000 aggregate
Property Damage	$100,000 each occurrence

$100,000 aggregate

Comprehensive General Liability

This insurance shall be written in comprehensive form and shall protect Contractor and additional insured parties against all claims arising out of any act or omission of the Contractor or his agents, employees or subcontractors.

The liability limits shall be not less than:

Bodily Injury	$500,000 each person $500,000 each occurrence $500,000 aggregate
Property Damage	$100,000 each occurrence $100,000 aggregate

Excess Liability Insurance

The Contractor shall obtain, pay for and maintain a policy during the contract term, insuring Contractor for an amount of not less than $1,000,000 combined single limit bodily injury and property damage liability insurance, including death, in excess of the primary coverage required hereinabove. The Owner, the Engineer and the State of Texas shall be named as additional insureds.

The Contractor shall furnish a Certificate of Insurance for the above coverage with a provision that the Owner will be notified by the insurance company ten (10) days prior to cancellation of the policy during the term of the contract, and if canceled, a new policy must be furnished prior to cancellation.

SC.32 PAYMENTS TO CONTRACTOR

Progress Payments

Article 5.04 of the General Conditions of Agreement, is hereby voided and replaced by the following:

The Contractor shall prepare a requisition for progress payment as of the 25th day of the month and submit it to the Engineer. The Engineer shall prepare a statement showing as completely as practicable the total value of the work done by the Contractor up to and including the last day of the preceding month; said statement shall also include the invoice value of all sound materials delivered, and properly stored and protected, on the site of the work that are to be fabricated into the work.

The Owner shall then pay the Contractor on or before the 25th day of the current month the total amount of the approved statement. The amount of the payment due the Contractor shall be determined by adding to the total value of work completed to date, the value of materials properly stored on the site and deducting (1) five percent (5%) of the total amount, as a retainage and (2) the amount of all previous payments. The total value of work completed to date shall be based on the estimated quantities of work completed and on the unit process contained in the agreement and adjusted by approved change orders. The value of materials properly stored on the site shall be based upon the estimated quantities of such materials and the invoice prices. Copies of all invoices shall be furnished to the Engineer.

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 payment 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 this Contract complete and satisfactory to the Owner in all details.
The five percent (5%) retainage of the progress payments otherwise due to the Contractor may not be reduced until the building of the project is

substantially complete and a reduction in the retainage has been authorized by the Owner.

Withholding Payments

The Owner may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the Owner and if so elects may also withhold amounts due from the Contractor to any subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions 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 dealers, or to withhold any moneys for their protection unless the Owner elects to do so. The failure or refusal of the Owner to withhold any moneys from the Contractor shall in no way impair the obligations of any surety or sureties under any bond or bonds furnished under this Contract.

Separate Payment

Except as modified by Change Orders subsequent to execution of the Contract for this proposed work, no separate payment shall be made for work described in these Specifications or shown on the Plans. Total compensation to the Contractor shall be as set forth in the various Bid Items in the Proposal and Bid Schedule.

The Owner, before paying the final estimate, may require the Contractor to furnish releases or receipts from all subcontractors having performed any work and all persons having supplied materials, equipment (installed on the Project) and services to the Contractor, if the Owner deems the same necessary in order to protect the Owner's interests. The Owner, however, may if it deems such action advisable make payment in part or in full to such Contractor without requiring the furnishing of such releases or receipts and any payments so made shall in no way impart the obligations of any surety or sureties furnished under this Contract.

Withholding of any amount due the Owner, under general and/or special conditions regarding "Liquidated Damages," shall be deducted from the final payment due the Contractor.

All sentences of Article 5.07 of the General Conditions shall remain and govern the contract as stipulated.

SC.33 WAGE RATES

All employees of the Contractor on the work to be performed under this contract shall be paid the prevailing wage scale in this locality for work of similar character, and in no event less than the rates shown in the schedule of minimum wage rates furnished in these Special Conditions.

SC.34 EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin. The Contractor shall take affirmative action to insure that applicants are employed, that employees are treated during employment without regard to their race, color, sex, religion, age 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 or applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(b) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants shall receive consideration for employment without regard to race, color, religion, sex, national origin or age.

(c) The Contractor shall 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.

(d) The Contractor shall include the provisions of this section in all subcontracts pertaining to the work.

SC.35 SUPERINTENDENCE BY CONTRACTOR

The Contractor shall have on the project at all times, as his agent, a competent Superintendent capable of reading and of thoroughly understanding the plans and specifications and thoroughly experienced in the type of work being performed. The Superintendent shall have full authority to execute orders or directions and to promptly supply such materials, equipment, tools, labor and incidentals as may be required. Such superintendence shall be furnished regardless of the amount of the work subcontracted.

SC.36 INSPECTION

The word "Inspection" or other forms of the word, as used in the contract documents for this project shall be understood as meaning the Engineer will observe and check the construction in sufficient detail to satisfy himself that the work is proceeding in general accordance with the contract documents, but he will not be a guarantor of the Contractor's performance.

SC.37 SHOP DRAWINGS

Contractor shall submit shop drawings in accordance with the following:

All shop drawings submitted by subcontractors for review by the Owner shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

The Contractor shall check all subcontractor's shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.

All details on shop drawings submitted for review shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted for review.

The review of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from his/her responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefor.

No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the review of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to reviewed shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

Shop Drawing Submittals can be sent by email to the Project Engineer for review in a Portable Document File (PDF). Each shop drawing shall be legible and be formatted no larger than 11" x 17".

SC.38 TRADE NAMES AND MATERIALS

Where materials or equipment are specified by a trade or brand name, it is not the intention of the Owner to discriminate against any equal product of another manufacturer, but rather to set a definite standard of quality or performance, and to establish an equal basis for the evaluation of bids. Where the words "equivalent,"

"proper," or "equal to" are used, they shall be understood to mean that the thing referred to shall be proper, the equivalent of, or equal to some other thing. Unless other wise specified all materials shall be of the best of their respective kinds, shall be in all cases fully equal to approved samples and shall never have been used for any temporary purpose whatsoever. Notwithstanding that the words "or equal to" or other such expressions may be used in the specifications in connection with a material, manufactured article or process specifically designated shall be used, unless a substitute shall be approved in writing before installation.

SC.39 TESTING OF MATERIALS

Testing and control of construction materials and methods used in the work shall be done by an approved local commercial laboratory employed and paid directly by the Owner, or other approved personnel employed by the Owner. Where a commercial laboratory is used, all representative testing caused by test failure will be accomplished at the Contractor's expense.

SC.40 COORDINATION WITH OTHERS

In the event other contractors are doing work in the same area simultaneously with this project, the Contractor shall coordinate his proposed construction with that of other contractors.

SC.41 EXISTING UTILITIES AND SERVICE LINES

The Contractor shall be responsible for the protection of all existing utilities or service lines crossed or exposed by his construction operations. Where existing utilities or service lines are cut, broken, or damaged, the Contractor shall replace or pay for replacement of the utilities or service lines with the same type of original construction, or better, at his own cost and expense.

SC.42 EXISTING STRUCTURES

The plans show the location of all known surface and subsurface structures. However, the Owner assumes no responsibility for failure to show any or all of these structures on the plans, or to show them in their exact locations. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or require the building of special work, provisions for which are not made in these plans and proposal, in which case the provisions in these specifications for extra work shall apply.

SC.43 CONNECTIONS TO EXISTING FACILITIES

Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock if necessary) to complete connections in the minimum time. Operations of valves or other appurtenances on existing utilities, when required, shall be by or under direct supervision of the Owner.

The Contractor should anticipate that the length of time for various connections, disconnections and modifications will be minimal. Also, the time of day when connections and disconnections may be accomplished will generally be during periods of low flow. The Contractor should plan his construction sequence and schedule accordingly.

SC.44 PROPERTY LINES AND MONUMENTS

The Contractor shall protect all property corner markers, and when any such 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.

SC.45 USE OF EXPLOSIVES

Use of explosives will not be allowed.

SC.46 LINES AND GRADES

All work under this Contract shall be constructed with the lines and grades shown on the Plans or as given by the Engineer. The full responsibility for holding to alignment and grade shall rest upon the Contractor.

The Contractor is responsible for providing construction staking for this project.

The Contractor shall stockpile excavation and other materials as to cause no inconvenience in the use of the lines and grades given. He shall remove any obstruction created by him contrary to this provision.

The Contractor shall safeguard all control points and bench marks established on the site by the Engineer, shall bear the cost of reestablishing same, if disturbed, and shall assume the entire expense of rectifying work improperly constructed due to failure to maintain and protect such established control points and bench marks.

SC.47 ACCESS TO PROJECT SITE AND RIGHT-OF-WAY

The Contractor shall provide at its expense all improvements and make suitable provisions for ingress and egress. The Contractor also shall provide at its expense necessary all weather access roads to the project location as required for transporting equipment and materials.
If additional area is needed by the Contractor, it shall be the responsibility of the Contractor to make all necessary arrangements and pay all costs associated with the acquisition and utilization of such area.

Specific right-of-way easement arrangements between the Owner and property owners include restrictions that may affect the Contractor's construction operations. These restrictions are summarized on a sheet included in the plans.

SC.48 BARRICADES, LIGHTS AND WATCHMEN

The Contractor shall, at his own cost and expense, furnish and erect such barricades, fences, lights and danger signals, shall provide such watchmen, and shall provide such other precautionary measures for the protection of persons or property and of work as are necessary. There shall be no open trenches not properly barricaded at the end of each workday. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise, the Contractor shall furnish and maintain sufficient lights at each barricade and sufficient numbers of barricades shall be erected to keep vehicles from being driven on or into any work under construction. The Contractor shall furnish watchmen in sufficient numbers to protect the work.

The Contractor will be held responsible for all damage due to failure of barricades, signs, lights and watchmen. The Contractor's responsibility for the maintenance of barricades, signs and lights, and for providing watchmen shall not cease until the project has been accepted by the Owner.

SC.49 PROTECTION OF TREES AND LANDSCAPING

No trees or landscaping shall be removed or cut without the Owner's approval except those that provide direct interference with the installation of the utility line within the permanent and temporary easements. The Contractor shall use proper caution to minimize removal of trees within the temporary easement. Trees adjacent to the permanent and temporary easements, but not interfering with the work, shall be protected from damage by the construction operations.

SC.50 LIGHTS AND POWER

The Contractor shall provide, at his own expense, temporary lighting and power facilities required for the proper prosecution of the work.

SC.51 WATER FOR CONSTRUCTION AND TESTING

The Contractor shall make the necessary arrangements for securing and transporting all water required in the construction. Water for testing will be provided by the Owner in accordance with Technical Specification Section for Testing Pressure Pipelines.

SC.52 TRENCH SAFETY SYSTEM

Contractor shall provide a trench safety system which conforms to OSHA Standards. The trench safety system shall meet all the requirements of Trench Safety Requirements Section of the Technical Specifications.

SC.53 TOOLS AND ACCESSORIES

The Contractor shall, unless otherwise stated in the specifications, furnish with each type, kind or size of equipment, one (1) complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain, or repair the equipment to the owner. Ordinary mechanic's tools are not considered special tools. Such special tools and appliances shall be furnished in approved painted steel cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.

Each piece of equipment shall be provided with a substantial name plate, securely fastened in place and clearly inscribed with the manufacturer's name, year or manufacture, and principal rating data.

SC.54 PROJECT MAINTENANCE

The Contractor shall maintain, and keep in good repair, the improvements covered by these plans and specifications during life of this contract.

SC.55 FENCES, IMPROVEMENTS AND DRAINAGE CHANNELS

Fencing and gates removed to permit construction shall be replaced in the same location and left in a condition as good as, or better, than that in which they were found. Fences to be removed and not replaced are noted on the plans.

Where surface drainage channels, storm sewers, or drainage structures are disturbed or altered during construction, they shall be restored to their original condition as soon as possible.

SC.56 DISPOSAL OF WASTE AND SURPLUS EXCAVATION

All trees, stumps, slashings, brush or other debris removed from the site as a preliminary to the construction shall be chipped or removed from the property. No burning will be allowed. No trash, debris or refuse from construction shall exist on the ground.

All excavated earth in excess of that required for backfilling shall be disposed of in a satisfactory manner in locations approved by the Owner.

SC.57 CLEANUP

The Contractor shall at all times keep the job site as free from all material, debris and rubbish as is practical and shall remove same from any portion of the job site as construction of that portion is completed.

Upon completion of the work, the Contractor shall remove from the site all plant, materials, tools and equipment belonging to him and leave the site with an acceptable appearance. The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver over such materials and equipment in a bright, clean, polished and new-appearing condition.

SC.58 ARCHEOLOGICAL DISCOVERIES

No activity which may affect a State Archeological Landmark is authorized until the Owner has complied with the provisions of the Antiquities Code of Texas. The Owner has previously coordinated with the appropriate agencies and impacts to known cultural or archeological deposits have been avoided or mitigated. However, the Contractor may encounter unanticipated cultural or archeological deposits during construction.

If archeological sites or historic structures are discovered after construction operations are begun, the Contractor shall immediately cease operations in that particular area and notify the Owner, and the Texas Historical Commission, (512-463-6096). The Contractor shall take reasonable steps to protect and preserve the discoveries until they have been inspected by the Owner. The Owner will promptly coordinate with the Texas Historical Commission and any other appropriate agencies to obtain any necessary approvals or permits to enable the work to continue. The Contractor shall not resume work in the area of the discovery until authorized to do so by the Owner.

Compensation to the Contractor, if any, for lost time or changes in construction resulting from the find, shall be determined in accordance with changed or extra work provisions of the Contract Documents.

SC.59 SERVICE OF MANUFACTURER'S REPRESENTATIVE

The contract price for the project shall include the cost of furnishing competent and experienced representatives from the manufacturers involved. Such representatives shall assist the Contractor, when required, to install, adjust, and test the equipment in conformity with the contract documents. After the equipment is placed in permanent operation by the City of Temple, such representatives shall make all adjustments and tests as specified or required to comply with the contract documents, and shall instruct the Owner in the operation and maintenance of the equipment.

SC.60 FINAL FIELD TESTS

Upon completion of the work and prior to final payment, all items installed under this contract shall be subject to acceptance tests as specified or required to provide compliance with the contract documents.

SC.61 AS-BUILT DIMENSIONS AND DRAWINGS

Contractor shall make appropriate daily measurements of work constructed and keep accurate records of location (horizontal and vertical) of all constructed work.

Upon completion of the project, the Contractor shall furnish the Owner with one set of direct prints, marked with red pencil, to show as-built dimensions and locations of all work constructed. As a minimum, the final drawings shall include the following:

(1) Horizontal and vertical locations of work.
(2) Changes in material and dimensions due to substitutions.
(3) Deletions, additions, and changes to scope of work.
(4) Any other changes made.

This set of marked up prints shall be incorporated into record drawings prepared by the Engineer.

No separate payment will be made for As-Built Drawings. Final retainage will not be released on this project until such drawings are provided to and approved by the Engineer.

General Decision Number: TX20210023 01/01/2021

Superseded General Decision Number: TX20200023

State: Texas

Construction Types: Heavy (Sewer/Water Treating Plant and Sewer/Incid. to Hwy.)

Counties: Bell, Bosque, Coryell, Falls, Freestone, Hamilton, Hill, Lampasas, Leon, Limestone, McLennan, Milam, Mills, Navarro, Robertson and Williamson Counties in Texas.

WATER & SEWAGE TREATMENT PLANTS AND LIFT PUMP STATIONS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015.

If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/01/2021

* SUTX1990-003 02/09/1990

	Rates	Fringes
CARPENTER	$ 9.00	
CEMENT MASON/CONCRETE FINISHER	$ 8.00	
ELECTRICIAN	$ 13.45	.80+8 1/2%
Form Builder	$ 7.25	
Form Setter	$ 7.25	
LABORER	$ 7.25	
Pipelayer	$ 7.50	
Power equipment operators:		
Bulldozers	$ 7.25	
Cranes, Clamshells, Backhoes, Derricks, Dragline, Shovels	$ 7.25	
Front End Loaders	$ 10.00	
Scrapers	$ 7.25	
Steel Setter	$ 9.50	
Steel Worker	$ 7.25	
Truck drivers:		
Tandem Axles	$ 7.25	
Transit Mix	$ 7.25	
Utility Laborer	$ 7.25	

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

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any

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

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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

this classification and rate.

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on

a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION Number: TX20210023 01/01/2021

TECHNICAL SPECIFICATIONS

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City of Temple
Avenue G Pump Station Improvements

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[1] See electrical drawings within plans for electrical specifications.
[2] See structural drawings within plans for structural specifications.

TECHNICAL SPECIFICATIONS

GENERAL

TECHNICAL SPECIFICATIONS

SECTION G01 - PIPE EXCAVATION, TRENCHING, EMBEDMENT, ENCASEMENT AND BACKFILLING

G01.01 DESCRIPTION OF WORK

A. This specification covers the requirements for furnishing all labor, equipment and material and performing all work necessary, in connection with excavation, trenching, embedment, encasement, and backfilling, for the installation of water lines in this project.

G01.02 EXCAVATION

A. General

1. 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.

B. Topsoil

1. Topsoil and grass shall be stripped a minimum of twelve inches over the trench excavation site and stockpiled separately prior to start of excavation.

2. After the trench has been backfilled, topsoil shall be replaced to the extent that rock, excavated from the trench, shall be completely covered and the area returned to its original condition.

C. Maximum and Minimum Width of Trenches

1. 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 eighteen (104) inches plus the outside diameter of the pipe, and the maximum width shall not be more than twenty-four (24) 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.

2. Wherever the prescribed maximum trench width is exceeded, the Contractor shall use the class embedment or encasement required by the Engineer to provide the load carrying capacity for the trench width as actually cut, and the additional cost incurred will be borne by the Contractor.

D. Sheeting and Shoring

1. Sheeting and/or shoring shall be provided in accordance with the Contractor's Trench Safety Plan, or where required for other reasons in caving ground, or in wet, saturated or flowing materials, the sides of all trenches and excavations shall be adequately sheeted and braced so as to maintain the excavation free from slides or cave-ins.

E. Dewatering Excavations

1. There shall be sufficient pumping equipment, in good working order, available at all times to remove any water that accumulates in excavations. Where the pipeline crosses natural drainage channels, the work shall be conducted in such a manner that unnecessary damage or delays in the prosecution of the work will be prevented. Provisions shall be made for the satisfactory disposal of surface water pumped so as to prevent damage to public or private property. The Contractor shall be responsible for maintaining safe working conditions and suitable construction techniques.

F. Disposal of Excavated Materials

1. Suitable excavated materials may be piled adjacent to the work to be used for backfilling. Excavated materials unsuitable for backfilling, or in excess of that required for backfilling, shall be disposed of by the Contractor. Desirable topsoil, sod, etc., shall be carefully removed and piled separately adjacent to the work when required. Excavated materials shall be handled at all times in such a manner as to cause a minimum of inconvenience to public travel. Suitable selected bedding or backfill material shall be provided at no additional cost to the Owner. The Contractor shall indemnify and hold harmless the Owner and all of his officers, agents and employees from all suits, actions, or claims of any character resulting from his arrangements for and disposal of excavated materials.

G. Trench Depth

1. Subgrade in Earth

a. Where a firm and stable foundation for the pipe can be obtained in the natural soil and where special embedment or encasement is not shown on the plans or specified herein, the bottom of the trench shall be excavated to a depth of not less than three (3) inches below the bottom of the pipe, one (1) inch below bell, and brought to true subgrade elevation with the embedment or encasement shown in the plans. Bell holes shall be accurately located and shall be of sufficient depth to allow ample room for making the joint and to relieve the pipe bell of all load.

b. Where special embedment or encasement is shown on the plans, the subgrade shall be excavated to the section shown prior to placing the embedment or encasement.

2. Subgrade in Rock

a. If the bottom of the excavation for the pipeline 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 elevation with the embedment or encasement shown in the plans. When constructing in expansive rock formations, the ditch shall be allowed to remain open for at least 24 hours to allow rock expansion prior to the placement of the pipe.

H. Soft Subgrade

1. Where soft or spongy material is encountered in the excavation at subgrade level, it shall be removed to such a depth that by replacing the unsuitable material with tamped gravel, a firm and stable foundation can be secured.

2. Gravel used shall be washed gravel or crushed stone and may fit any gradation of size up to three (3) inches. The particular gradation shall take into consideration the actual field conditions.

I. Excavated Materials

1. Excavated materials shall be piled adjacent to the work to be used for backfilling as required. After the trench has been refilled, topsoil shall be replaced to the extent that rock excavated from the trench will be completely covered and the area is returned to its original condition.

2. Where required on the plans or when otherwise specified, desirable topsoil shall be piled separately in a careful manner and replaced in its original position.

J. Damage to Existing Utilities

1. Where existing utilities are damaged, they shall be replaced immediately with material equal to or better than the existing material. Such work shall be at the entire expense of the Contractor.

G01.03 EMBEDMENT AND ENCASEMENT

A. General

1. Embedment shall be as required in the plans. All embedment materials shall be free of grass, roots, vegetation, and other deleterious materials. Embedment details are shown on the Plans.

2. When the pipe has been checked for line and grade, the trench shall be backfilled with enough granular material or concrete on both sides to hold the pipe firmly in position. When placing granular material or concrete around the pipe, care shall be taken to fill all voids around the pipe. The pipe shall not be floated. The embedment or encasement material shall be carefully tamped to assure uniform pipe support and density.

B. Sand Embedment

Material shall be a clean coarse-grained cohesionless material which will pass a ¼-inch screen and 90% by weight be retained on a No. 60 sieve. No crusher fines shall be used.

C. Crushed Stone for Embedment

Embedment materials shall be crushed stone conforming to ASTM Designation 57 for Crushed Aggregate and having the following sieve analysis:

Sieve Size	% Retained
1 – ½"	0
1"	0 – 5
½"	40 – 75
#4	90 – 100
#04	95 - 100

Materials of other gradation and composition may be utilized if specifically approved.

Pipe shall be bedded in accordance with the standard details shown in the plans and with the class of embedment specified on the plan-profile sheets. Crushed stone embedment shall be evenly spread to grade. Bell holes shall be dug to allow placement of the joint wrapper. After the pipe has been laid, embedment material shall be placed adjacent to the haunches of the pipe as shown in the Detail Sheet. Whenever the prescribed maximum trench width is exceeded, the Contractor shall utilize at his own expense the class of embedment or encasement required to provide the load-carrying capacity for the trench width as actually cut, as approved by the Engineer.

D. Pea Gravel for Embedment

Material shall be washed screened gravel conforming to the following sieve analysis:

100%	Passing ½" Sieve
040 – 100%	Passing 3/04" Sieve
15 – 70%	Passing #4 Sieve
Less than 2%	Passing #10 Sieve

E. Concrete Embedment and Encasement

1. Concrete embedment and encasement and cap shall have a minimum compressive strength of 2,000 pounds per square inch at 204 days.

2. Concrete shall be mixed to obtain a slump of not less than one (1) inch or more than four (4) inches.

3. After pipe joints are completed, the voids at the joints in the embedment section shall be filled with concrete, and the embedment shall be brought up to proper grade. Where concrete is placed over or along the pipe, it shall be placed in such manner as not to damage or injure the joints or displace the pipe. Care shall be taken in the placement of concrete to assure that a uniform pad, free of voids and of specified thickness, is constructed under the entire pipe section.

4. A cleavage line between the base concrete and the side embedment concrete will not be allowed. Backfilling shall be done in a careful manner and at such time, after concrete embedment of encasement has been placed, as not to damage the concrete in any way.

5. 2,000 psi Concrete shall be used and shall be paid for at the unit contract price per cubic yard for 2,000 psi Concrete actually placed and approved by the Engineer.

G01.04 BACKFILLING

A. General

1. Backfilling shall include the refilling and consolidating of the fill in trenches and excavations up to the surrounding ground surface or road grade at crossings. No backfill shall be placed until the Owner or Owner's Representative has observed the trench and pipe in place and has authorized the placing of backfill.

2. Backfilling shall be done with select material or concrete backfill as described hereafter and shown on the plans. No material of a perishable, spongy or otherwise unsuitable nature shall be used in backfilling.

B. Select Backfill Material

1. Unless otherwise shown on the plans, or approved by the Engineer, select material shall be used for backfill. Select materials shall be placed over the top of the embedment/encasement material, where designated on the plans and as shown in embedment details. Select material shall consist of a free-flowing material like sand or mixed sand and gravel, free from lumps, large stones, clay, debris, and organic materials. Select material may also include rock cuttings from a ditching machine (preferably wheel-type), provided that the largest chips shall have an average dimension in one place less than one (1) inch, and no dimension greater than two (2) inches.

2. If approved by the Engineer, good, sound excavated materials may be used as select material for backfill over the pipe. Good, sound excavated materials are defined as gravel, sandy loam or loam, free from excessive clay and having a Plasticity Index less than 22. Select material shall not have rocks with an average dimension larger than two (2) inches.

3. It shall be the full responsibility of the Contractor to explore the project and subsurface materials to determine if the trench excavation will be suitable for use as select materials and to follow as closely as possible this specification to insure a good, sound pipeline when completed.

C. Concrete Backfill

1. Where shown on the plans, concrete backfill shall consist of selected rock material or granular sand material mixed with a minimum of three sacks of cement per cubic yard. All material shall be mixed in a concrete mixer or transit mixed unless approved otherwise by the Owner.

D. Backfilling Operation

1. After the pipe and embedment have been placed to twelve (12) inches above the top of the pipe, the method of backfilling pipe trenches shall be as follows: Select material shall be carefully placed in layers of not more than six (6) inches in loose thickness. Select material shall consist of a free-flowing material like sand, free from lumps, large stones, clay, debris, and organic materials or excavated material from the trench which has a maximum dimension of two (2) inches, processed excavated material from the trench which has a maximum particle dimension of two (2) inches. Rock cuttings from a wheel-type ditching machine having an average dimension in one place of less than one (1) inch and no dimension greater than three (3) inches and shall be free from lumps, large stone and organic materials. The select material shall then be compacted with mechanical compactors. Select backfill material shall be compacted to 045% density ASTM D6904 unless otherwise specified.

2. All trenches under proposed or existing roadways, driveways and sidewalks, paved waterways with concrete base, gravel roadways, and roadways with gravel base and asphalt surface, shall be backfilled by hand or mechanically tamping selected materials in six to eight inch layers to a minimum compaction of 95 percent ASTM D6904 at optimum moisture density.

3. After the trench has been refilled, topsoil shall be replaced to the extent that rock excavated from the trench will be completely covered or removed and the area is returned to is original condition, a minimum of 12 inches of topsoil shall be replaced.

G01.05 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work performed under this specification for excavating, trenching, embedment, and backfilling. All costs incurred shall be included in the contract price for the appropriate items in the Proposal and Bid Schedule.

B. No separate payment will be made for sand or gravel used in embedment. All costs incurred shall be included in the contract price for the appropriate bid item.

C. Separate payment will be made for implementation of the Trench Safety Plan at the contract unit price as provided in the Proposal and Bid Schedule.

D. Separate payment will be made for 2,000-PSI Concrete Encasement or Backfill at the contract unit price as provided in the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G02 - SITE PREPARATION, STRUCTURAL EXCAVATION AND BACKFILL, AND SITE FILL

G02.01 GENERAL

The work to be performed under this section of the specifications shall consist of furnishing all labor, equipment and materials, and performing all operations necessary in connection with the site preparation, excavation and backfilling, as shown in the plans and as specified herein.

G02.02 SITE PREPARATION

Site preparation shall include the removal of trees and brush required for installation of proposed structures, pipelines and roads. Trees and brush shall be removed to a depth at least two (2) feet below the finished grade. More detailed description of site clearing and grubbing requirements are included in Section G11 of these Technical Specifications.

In addition, heavy growths of weeds or other plants shall be stripped from the surface in order to provide clear access to the work site and to prevent their inclusion in stockpiled soil which is to be reused later. Trees, stumps, surface plants and all debris removed from the site shall be disposed of off-site by the Contractor. More detailed description of site clearing and grubbing requirements are included in Section G11 of these Technical Specifications.

G02.03 EXCAVATION

A. General

Excavation shall include the removal of any stumps, debris and other obstacles that may obstruct the construction of the work and the excavation and removal of all earth, rock or other materials to the extent necessary to construct all the work shown in the Plans.

The excavation shall conform to the dimensions and elevations indicated on the drawings for each structure. Excavation shall extend a sufficient distance from walls to allow for placing and removal of forms, sheeting or shoring, installation of piping, and for inspection.

Any excavation for footings beyond the lines required by the plan dimensions, except as such may be ordered in writing by the Owner, shall be backfilled with Class "C" concrete at the Contractor's expense.

At the time concrete is to be placed, the excavation shall be free from accumulated seepage water and all loose material shall have been removed from the base area.

The Contractor shall provide suitable access and lighting for the Owner's Representative to inspect the completed foundation excavation.

B. Procedures

Excavation and pier drilling procedures shall be chosen and managed by the Contractor. Engineering information and recommendations are included in a Geotechnical Report described in this section. The Owner requires that all recommendations in that Report be followed during construction.

C. Disposal of Excavated Materials

Suitable excavated materials may be stockpiled to be used for backfilling. Excess excavated materials and unsuitable backfill materials shall be disposed of by the Contractor in the following manner:

1. Clays, sands and gravel in excess of project requirements shall be disposed of by the Contractor at such locations and under consideration arranged by the Contractor.

2. Limestone and other rock excavation shall be disposed of by the Contractor at such locations and under consideration arranged by the Contractor.

The classification of clays, sands, gravel, limestone and rock shall be made in accordance with the Unified Soil Classification System, U.S. Army Corps of Engineers, T.M. 3-357.

Desirable topsoil, sod, or area fill shall be carefully removed and piled separately adjacent to the work when required. Excavated materials shall be handled at all times in such a manner as to cause a minimum of inconvenience to the Owner's operations, and to permit safe and convenient access to private and public property adjacent to the work. The Contractor shall indemnify and hold harmless the Owner and all of his officers, agents and employees for all suits, actions or claims of any character resulting from his arrangements for and disposal of excavated materials.

G02.04 UNAUTHORIZED EXCAVATION

Whenever the excavation is carried beyond or below the lines and grades as shown on the plans, except as specified above, all such excavated space shall be refilled with such material and in such a manner, as may be directed by the Owner, so as to insure the stability of the affected structure. Beneath all structures, space excavated without authority shall be refilled by the Contractor, at his own expense, with Class "C" concrete, crushed stone or selected fill materials, as directed by the Owner.

G02.05 TRENCH SAFETY SYSTEM

Where required in the Contractor's Trench Safety System, or where required for other reasons in caving ground, or in wet, saturated or flowing materials, the sides of all trenches and excavations shall be adequately sheeted and braces do as to maintain the excavation free from slides or cave-ins.

The Contractor shall not remove any sheeting or shoring materials which are lower than twelve (12) inches above the top of the pipe.

G02.06 REMOVAL OF WATER

The Contractor shall, during the excavation period and as long thereafter as the condition of the work may require, provide and maintain, in good operating condition, pumping equipment fully adequate in capacity to promptly remove all water entering any excavation or other parts of the work.

All excavations shall be kept dry, and water pumped or drained from the work shall be disposed of in an approved manner. Any and all damage, of whatever nature, caused by dewatering the work shall be promptly repaired or remedied by the Contractor at his own expense.

G02.07 GEOTECHNICAL REPORT

A geotechnical investigation was made and pertinent results and recommendations are included in the report dated August 9, 2021. The investigation and report were prepared by:

Langerman Foster Engineering Company
2000 South 15th Street
Waco, Texas 76706
(254) 235-1048

Copies of the report may be inspected at the office of Kasberg, Patrick & Associates, LP; Nineteen North Main Street; Temple, Texas 76501.

Included in the report are logs of soil borings, an introduction and description of soils investigations, a general description of site geology and site conditions, foundation design and construction considerations, recommendations on foundation design, and detailed construction recommendations.

G02.08 BACKFILLING AND SITE FILL

The materials to be used in backfilling, fills, engineered fills, granular underdrains, wherever indicated on the Plans or described in the Geotechnical Report shall meet all requirements of quality, gradation, quantity, method of placement and compaction as described in the Geotechnical Report.

G02.09 SOURCES OF FILL

Any existing topsoil which must be removed for proposed construction should be stockpiled for reuse as topsoil or site fill. If this is not done the Contractor shall provide acceptable topsoil from other sources.

The Contractor shall import such structural fill, site fill or topsoil as may be needed to complete the work as shown on the plans.

G02.10 MEASUREMENT AND PAYMENT

No separate payment will be made for work performed under this specification or shown on the plans, for excavating, trenching, backfilling and site fill, but the cost thereof shall be included in the proper item of the Proposal and Bid Schedule, except as provided for Trench Safety Systems.

Payment for Trench Safety System will be made per linear foot as provided in the Proposal and Bid Schedule for Furnishing and Installing Trench Safety Systems as described in the Trench Safety System section of these specifications. The lump sum shall be paid in proportion to the excavation performed as shown on each progress payment.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G03 - TRENCH SAFETY SYSTEMS

G03.01 DESCRIPTION OF WORK

A. This specification covers the requirements for providing trench safety systems consisting of shoring, sheeting, trench shield, and/or laid back slopes to meet the trench safety requirements of the Occupational Safety and Health Administrations, as required for this project and specified herein.

G03.02 GENERAL

A. Trench safety systems shall be provided by the Contractor as provided in Subpart P-Excavation, Trenching and Shoring, Part 10526 of the Code of Federal Regulations which describes safety and health regulation as administered by the U.S. Department of Labor Occupational Safety and Health Administration (O.S.H.A). The standard specified by the O.S.H.A. Regulation shall be the minimum allowed on this project. It shall be the responsibility of the Contractor to design and install adequate trench safety systems for all trenches excavated on this project.

B. Before beginning construction, the Contractor shall furnish to the Owner for inclusion in the Contract Documents, a Trench Safety Plan for the entire project. The trench safety plan must be prepared and sealed by a Professional Engineer registered in the State of Texas. In addition, all trench safety systems utilized in this project must be designed by a Professional Engineer registered in the State of Texas. The Contractor shall be totally responsible for the safety of all persons involved in the construction of this project.

G03.03 SOIL BORINGS

A. Any borings and soil data furnished by the Owner are for the convenience of the Contractor. The Contractor shall be responsible for any additional soil or geotechnical information required. The Contractor shall be responsible for properly designed trench safety systems to be utilized for any type or subsurface condition found on this project. The Furnishing of soil information by the Owner in no way relieves the Contractor of this obligation.

G03.04 MEASUREMENT AND PAYMENT

A. Payment for Trench Safety Systems shall be made per linear foot for pipe and per square foot for structural excavations as provided in the Proposal and Bid Schedule for Furnishing and Installing Trench Safety Systems. The payment shall be full compensation for all planning, engineering, materials, equipment, fabrications, installation, recovery and all incidental work required. All excavation and backfill in addition to that specified elsewhere in these specifications shall be considered subsidiary to this bid item.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G04 – PREPARING RIGHT OF WAY

G04.01 DESCRIPTION OF WORK

A. The work to be performed under this section of specifications shall consist of the preparation of the right of way for construction operations by the removal and disposal of all obstructions from the right of way and from designated easements, where removal of all such obstruction is not otherwise shown on the construction drawings and specifications.

B. Such obstructions shall be considered to include remains of houses, foundations, floor slabs, concrete, brick, lumber, plaster, septic tank drain fields, basements, abandoned utility pipes or conduits, equipment, fences, retaining walls and buildings.

C. This Item shall also include the removal of trees and shrubs and other landscape features, not designated for preservation and stumps, brush, roots, vegetation, logs, curb and gutter, driveways, paved parking areas, miscellaneous stone, sidewalks, drainage structures, manholes, inlets, abandoned railroad tracks, scrap iron and debris, whether above or below ground except live utility facilities.

D. These obstructions do not include wells which shall not be removed unless specifically noted to be removed. Where wells are to remain in place, they shall be protected in accordance with appropriate state or county regulations.

G04.02 CONSTRUCTION METHODS

A. General

1. All areas, as shown on the plans, shall be cleared of all structures and obstructions as defined above. Those trees, shrubs and other landscape features specifically designated on the plans for preservation shall be carefully protected from abuse, marring, or damage during construction operations. Continual parking and/or servicing of equipment under branches of trees marked for preservation will not be permitted. When trees and shrubs are designated for preservation and require pruning, they shall be trimmed as directed by the Owner and all exposed cuts over 2 inches in diameter shall be treated with a material approved by the Owner or his representative.

2. Culverts, storm sewers, manholes and inlets shall be removed in appropriate sequence for maintenance of traffic and drainage.

B. Disposal of Material

1. Unless otherwise shown on the plans, all materials and debris removed shall become the property of the Contractor, including all merchantable timber, and shall be removed from the right of way and disposed of in a manner satisfactory to the Owner.

C. Backfill

1. Holes remaining after removal of all obstructions, objectionable material, trees, stumps, etc., shall be backfilled with approved material, compacted and restored to its original contours by blading, bulldozing, or by other methods, as approved by the Owner. In areas to be immediately excavated, the backfilling of holes may not be required when approved by the Owner or his representative.

2. Before backfilling, the remaining ends of all abandoned storm sewers, culverts, sanitary sewers, conduits, and water or gas pipes over 3 inches in diameter, shall be plugged with an adequate quantity of concrete to form a tight closure or as otherwise stated.

G04.03 MEASUREMENT AND PAYMENT

A. Preparation of right of way will be measured and paid for as provided for in the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G05 - CONSTRUCTION WITHIN RIGHT-OF-WAY OF HIGHWAYS, COUNTY ROADWAYS, CITY STREETS AND RAILROADS

G05.01 DESCRIPTION OF WORK

This section of the specifications shall govern unless otherwise specified in applicable permits, the installation of pipelines along and across the rights-of-way of highways, roadways, and city streets.

G05.02 CONSTRUCTION IN TEXAS DEPARTMENT OF TRANSPROTATION RIGHTS-OF-WAY

A. Pipelines to be placed across rights-of-way of the Texas Department of Transportation (TxDOT) shall be installed as shown on the plans and as specified herein.

B. Encasement pipe shall be installed under the highway by boring in accordance with details shown on the plans. The pipe shall be installed with even bearing throughout its length, and all voids between the earth and encasement pipe shall be filled with grout. The pipe shall be tightly jointed to prevent leakage.

C. The Contractor shall notify TxDOT of his construction schedule not less the 5 days prior to commencing work within the right-of-way. The Contractor shall conform to the requirements of TxDOT as to details of construction methods and time of construction. All construction equipment must be kept well off the highway pavement unless otherwise approved by TxDOT.

D. Where encasement of carrier pipe is required to be installed under highways, streets, or other facilities by jacking of boring methods, construction shall be made in a manner that will not interfere with the operation of the highway, or other facility, and will not weaken or damage any embankment or structure. During construction operations, barricades and lights to safeguard traffic and pedestrians shall be furnished and maintained, as required, until such time as the backfill has been completed and then shall be removed from the site.

E. The Contractor shall take the proper precautions to avoid excavating earth or rock or shattering rock beyond the limits of excavation needed to install the conduit. All damages by excavating and blasting either of surface or subsurface structures, shall be repaired or replaced by the Contractor at his own cost and expense.

F. The removal of any obstruction that may be found to conflict with the placing of this pipe will not be measured for payment or paid for as separate contract pay item. The removal of any such obstruction will be included in such contract pay items as are provided in the proposal and contract.

G05.03 CONSTRUCTION IN RIGHTS-OF-WAY OF COUNTY ROADS AND CITY STREETS

A. Pipelines may be placed along and across county roads, city streets and private driveways by the open cut method, unless designated otherwise on the plans. However, the Contractor shall at all times, keep a sufficient width of the roadway clear of dirt and other material to allow free flow on one lane of traffic. It shall be the responsibility of the Contractor to build and maintain all weather by-passes and detours, if necessary, and to furnish all flagmen and to properly light, barricade and mark all by-passes and detours that might be required on and across the roadways involved in this project. Barricades, construction signs and warning lights shall conform to TxDOT and Public Transportation Standards of Construction.

B. The Contractor shall make every effort to complete construction and allow immediate access to adjacent property at all driveway entrances located along the roadways or streets. Owners or tenants of improvements where access and/or entrance drives are located shall be notified at least eight (8) hours prior to the time the construction will be started at their drive-ins or entrances and informed as to the length of time driveways will be closed, which period shall not exceed six (6) hours.

C. The Contractor shall be responsible for all road and entrance reconstruction, and repairs and maintenance of same, for a period of one year from the date of such reconstruction. In the event the repairs and maintenance are not made immediately, and it becomes necessary for the City to make such repairs, the Contractor shall reimburse the City for the cost of such repairs.

D. Backfill in trenches within the rights-of-way of county roads and city streets shall be placed in accordance with requirements of the agency having jurisdiction of such roads or streets, and according to the various applicable sections of these specifications which govern the installation of the pipelines. Before completion of the proposed work, all roadway shoulders, slopes, ditches and berms shall be restored to their original condition.

G05.04 MEASUREMENT AND PAYMENT

No separate payment will be made for items included in this section. All related costs shall be included in the proper item of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G06 - DUCTILE IRON PIPE AND FITTINGS

G06.01 DESCRIPTION OF WORK

A. This specification covers the requirements for furnishing and installing ductile-iron pipe and gray-iron or ductile-iron pipe fittings including bracing, pipe laying, jointing, testing, blocking, and any other work that is required or necessary to complete the installation as shown in the plans and as specified herein.

G06.02 PIPE AND FITTINGS

A. General

1. All pipe and fittings under this section of the specifications shall have the interior wall cement lined and seal coated, unless specified differently. A shop applied bituminous coating for underground installation, or a field or shop coating of primer for above ground installation shall be applied on the exterior surface of pipe. Coatings shall be applied in accordance with AWWA C104 and the Painting Specifications. The primer shall be compatible with the final paint system used. The interior surface of the pipe shall be polythane lined as manufactured by U.S. Pipe or Protecto 401 ceramic epoxy lined as manufactured by McWane Cast Iron Pipe Company. All linings shall have a minimum thickness of 40 mil.

2. All fittings shall be in accordance with AWWA C110. Fittings may be either Gray-Iron or Ductile-Iron and shall be pressure rated for a working pressure equal to piping.

3. Material supplied shall be equal to that manufactured by U.S. Pipe and Foundry, American Ductile Iron Pipe, James B. Clow and Son, Inc., or approved equal.

4. Ductile Iron Pipe shall be manufactured from metal having a minimum tensile strength of 60,000 pounds per square inch, minimum yield strength of 42,000 pounds per square inch, and a minimum elongation of 10 percent (60-42-10). Ductile iron pipe shall be designed for a rated water working pressure of 150 psi. All such pipe shall bear a mark denoting approval by the Underwriter's Laboratory, Chicago, Illinois, so that it will be acceptable to the Texas State Fire Insurance Commission for use in fire protection lines without penalty. Pipe shall be provided in the proper class per AWWA C150, except where a higher class is shown on the plans.

5. All ductile-iron pipe and ductile-iron or cast iron fittings shall have joints as shown on the plans and as described herein. The Contractor shall furnish layout drawings which show each run of pipe and indicate the location of all bends, outlets, special fittings, joint system, and connections which are to be included as a part of the pipe to be installed on this project. The Owner shall review and approval of all joint systems shall be obtained before installation shall begin.

6. The Manufacturer shall furnish certified statements that pipe, fittings, and joints have been manufactured, tested, and inspected in accordance with these specifications.

B. Mechanical Joints and Push-On Joints

1. Ductile-Iron pipe with push-on or mechanical joints shall be Centrifugally Cast Pipe in accordance with AWWA C150 and C151. **AWWA G153 Compact fittings are approved for this project.**

2. All mechanical or push-on joints shall be of the type which provides a recession in the bell for the employment of a single rubber gasket to be placed before the insertion of the spigot. Joints shall be manufactured in accordance with AWWA C111. Corten T-head bolts shall be used on mechanical joint pipe.

C. Flanged Joints

1. Ductile-Iron pipe with flanges shall be supplied in accordance with AWWA C115 and C150. The minimum thickness of pipe that shall be flanged is Class 150. Larger classes of pipe shall be used as required in AWWA Specifications. Any flanges installed underground shall be enclosed in mortar.

2. Flanges shall be threaded onto pipe. Flanges shall be rated for 125 pounds per square inch working pressure, faced and drilled in accordance with AWWA C110 and C115, Gaskets for flanged joints shall be rubber with cloth inserts equal to those manufactured by the Crane Packing Company, or the U.S. Rubber Company, or approved equal. Gaskets shall extend at least to the inside of the bolt holes.

D. Restrained Joints

1. Ductile-Iron pipe with restrained joints shall be supplied in accordance with ANSI/AWWA-C111/A21.11.

G06.03 POLYETHYLENE ENCASEMENT

A. All buried ductile iron pipe and fittings shall be encased with 8 mil, Type I, Grade E-1, polyethylene film according to AWWA C105. Film shall be provided in sheets with width determined by pipe size according to AWWA C105. Installation shall be according to AWWA C105 Method C. Polyethylene encasement shall not be paid for separately, but the cost thereof shall be included in the appropriate item of the Proposal and Bid Schedule.

G06.04 INSTALLATION

A. The Contractor shall obtain installation instructions, including support spacing, from the Manufacturer and shall comply with the instructions.

B. The specified embedment shall be accurately shaped and trimmed to receive the pipe barrel and each pipe section, when in place, shall have a uniform bearing on the subgrade for the full length of the pipe barrel. Pipe shall not be laid unless the subgrade is free of water and in a satisfactory condition. Adjustments of the pipe to line and grade shall be made by scraping away of filling in with granular material, and not by wedging or blocking up the bell.

C. The interior of the pipe shall be clean and joint surfaces shall be clean and dry when the pipe is lowered into the trench. Each pipe, fitting, valve shall be lowered in the trench carefully and laid true to line and grade.

D. All piping on this project, regardless of size or class, shall be placed in sand embedment as shown on detail sheets in Plans unless otherwise specified or shown.

G06.05 PROTECTION OF PIPELINE

A. Well fitted stoppers or bulkheads shall be securely placed in all openings and in the end of the line when construction is stopped temporarily and at the end of each day's work. It shall be the responsibility of the Contractor to deliver to the Owner a pipeline which is clean throughout its entire length.

G06.06 CONCRETE AND BLOCKING

A. 2,000 psi concrete shall be placed for blocking at each change in horizontal and/ or vertical direction in the pipeline, in such manner as will substantially brace the pipe against undisturbed trench walls. Concrete blocking, made from Type I cement, shall have been in place four (4) days prior to testing the pipeline as hereinafter specified. Test may be made in two (2) days after completion of blocking if Type III cement is used.

B. At all points where wet connections are made to existing lines, the existing lines shall be adequately blocked and the tapping connection fittings shall be supported by blocking up to the spring line with 2,000 psi concrete.

C. Concrete blocking will not be measured or paid for as a separate item but the cost thereof shall be included in the various items listed in the Proposal and Bid Schedule.

G06.07 LEAKAGE TESTING

A. See Technical Specifications Section G14 – Testing for Pressure Pipelines.

G06.08 APPURTENANCES

A. Fittings, bends, plugs and valves shall be of standard manufacture and mechanical joint type to fit AWWA pipe specifications in Classes A, B, C and D.

G06.09 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work performed in accordance with this section of the specifications, and the cost thereof shall be included in the lump sum amount of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G07 - PVC PIPE, FITTINGS AND VALVES

G07.01 GENERAL

This section covers polyvinyl chloride pipe, fittings and valves to be used at locations shown on the plans and as specified herein.

The following table is intended to clarify the classes of pipe referred to in Section G08 and shown in the Plans:

PIPE	APPLICABLE SPECIFICATION
6" Potable Waterline	AWWA C900-81 Class 150, DR-18 and Sheet G.06 of the Plans
107	ASTM D3034, PVC Sewer Pipe, DR-26
108	ASTM D3034, PVC Sewer Pipe, DR-26
110	ASTM D3034, PVC Sewer Pipe, DR-26

All gravity sewer and drain lines shown on the Plans shall be ASTM D3034, PVC sewer pipe, DR-26.

All underground potable water PVC piping shall conform to AWWA C900-81, Class 150 psi with a dimension ration of 18 (DR-18), as described herein.

All underground chemical lines, such as the chlorine feed lines and the polymer feeder system lines, shall conform to ASTM D-1785 with dimensions and pressure rating conforming to Schedule 80, as well as all other requirements for PVC pipe and fittings as described in this section of the Technical Specifications.

All exposed PVC pipe shall incorporate an approved UV suppressor (titanium dioxide or equivalent). Supplier shall provide a description of proposed suppressor, plus notarized certification that it is included in pipe supplied for this project.

G07.02 PVC PIPE AND FITTINGS FOR SMALL DIAMETER SERVICE LINES

PVC piping shall be of the nominal internal diameter shown on the Plans and shall, unless threaded joints are shown on the Plans, be similar and equal to Solvent Weld (IPS) Pressure Pipe and Fittings manufactured by CertainTeed Pipe and Plastics Group, Celanese Piping Systems, Inc. or approved equal. Pipe and fittings shall conform to ASTM D-1785 with dimensions and pressure rating conforming to Schedule 80; fittings shall conform to the requirements of ASTM D-2467 for socket type Schedule 80.

All PVC pipe and fittings shall be manufactured from PVC Type I,
Grade 1 material complying with ASTM D-1784.

Pipe, fittings, and valves shall bear the NSF hallmark indicating that they have been tested in accordance with NSF Standard No. 14 and have been approved for conveying potable water by the National Sanitation Foundation.

G07.03 PVC PIPE AND FITTINGS FOR GRAVITY LINES

PVC pipe for use in gravity drain lines shall conform to ASTM Specification D-3034 and shall be SDR 26.

G07.04 INSTALLATION

The Contractor shall obtain installation instructions, including support spacing and solvent welding, from the supplying manufacturer, shall comply with the instructions, and shall meet the requirements of ASTM D-2855, Standard Recommended Practice for making Solvent Cemented Joints with PVC Pipe and Fittings. The PVC solvent cement shall comply with ASTM D-2564 and shall be furnished by the pipe and fitting manufacturer for the class and type of pipe supplied to the project.

G07.05 PVC VALVES

Valves shall be manufactured of the same PVC Type I, Grade 1 molding compound as the fittings to assure compatibility. All ball valves shall have Teflon ball seals and Viton stem and body seals. Ball valves shall carry a pressure rating of 150 psi W.O.G. at 73□F. One half inch (½") to two inch (2") ball valves shall be of True Union design, TU Series, as manufactured by Celanese Pipe Systems, Louisville, Kentucky.

G07.06 SUPPORTS

Interior pipe shall have adequate supports, as recommended by the Pipe Manufacturer, in all runs. All threaded support rods shall be equipped with double lock nuts.

G07.07 PAYMENT

No separate payment shall be made for work in accordance with this section of the specifications, and the cost thereof shall be included in the lump sum amount of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G08 – VALVES AND BACKFLOW PREVENTERS

G08.01 DESCRIPTION OF WORK

The work to be performed under this specification shall consist of furnishing and installing all valves on this project.

G08.02 GATE VALVES

All gate valves shall be iron body, bronze mounted, non-rising stem, and shall be furnished with a 2-inch square operating nut for underground installation, or shall be furnished with a handwheel for interior or above ground locations, or special operators as shown on the Plans. All gate valves shall be operated with a maximum of 40 ft/lbs torque applied to the shaft unless otherwise shown on the Plans or approved. Gate valves shall have mechanical joint, flanged ends or rubber gasket joint as shown in the Plans. All gate valves shall be equipped with double "O" ring type packing meeting the requirements of AWWA Specifications.

Valves shall be designed for a minimum water pressure of 200 pounds per square inch in sizes 2-inch through 12-inch and 150 pounds per square inch in sizes 14-inch through 48-inch. Allowable test pressure shall be double that specified. Gate valves shall have a clear waterway equal to the full nominal diameter of the valve and shall be opened by turning left. Each valve shall have the maker's initials, pressure rating, and year in which manufactured cast in the body.

Gate valves in sizes 4-inch through 16-inch, shall be Resilient Seat Gate Valves conforming to AWWA C509, and shall be Mueller A-2370 Series, or equal.

Gate valves above 16-inch size shall be Double Disc Gate Valves conforming to AWWA C500, and shall be Mueller Lineseal III Series, or equal.

Valves of equal quality may be offered by American AVK, Clow, Kennedy, M & H, U.S. Pipe, and Waterous; however, each and every submittal must be reviewed by the Owner prior to acceptance.

G08.03 CHECK VALVES

Swing check valves shall be furnished and installed in the six (6) 16” discharge pipes at the Booster Pump Station as shown on the plans. Check valves shall be slanting disc type with bottom mounted buffer (BMB) closure control devices. Check valves shall have cast iron body, bronze mounted swing type, solid bronze hinges, stainless steel hinge shaft, and a maximum shutoff differential of 150 psi. Valves shall be ASME Class 125/150 and shall be APCO CSD Slanting Disc Check Valves as manufactured by Dezurik or approved equal.

G08.04 BACKFLOW PREVENTER

A backflow preventer is required downstream of the 1" water meter shown on the Sheet P-14 of the Plans. This reduced pressure principal backflow preventer shall be a complete assembly consisting of two independently acting, spring loaded, toggle level, check valves together with an automatically operating pressure differential, relief valve located between the two check valves. The first check valve shall reduce the supply pressure at a predetermined amount so that during normal flow and the cessation of normal flow, the pressure between the check valves is less than the supply pressure. In the case of leakage of either check valve, the differential relief valve shall discharge to atmosphere to maintain the pressure between the check valves at less than the supply pressure.

The total head loss through the complete backflow preventer assembly shall not exceed 10 psi at the rated flow. The reduced pressure principle backflow preventer shall be similar and equal to Model RP-1 Backflow Preventer as manufactured by Cla-Val Co. or approved equal.

G08.05 PRESSURE REDUCING CONTROL VALVES

A. The Pressure Reducing Control Valve shall automatically throttle to reduce a higher incoming pressure and maintain an accurate and constant lower downstream pressure regardless of changing flow rate and/or inlet pressure. If downstream pressure increases above the pilot spring setting, the valve shall close. When the outlet pressure is greater than the inlet pressure, the valve shall permit return flow.

B. Materials Specifications for the Pressure Reducing Control Valves Main Valve as follows:

Component	Material
Body & Cover	Ductile Iron-ASTM A536
Main Valve Trim	Stainless Steel
Seat	Stainless Steel
Stem, Nut and Spring	Stainless Steel
Diaphragm	Nylon Reinforced Buna-N® Rubber
Internal Trim Parts	Stainless Steel: Bronze; Brass
End Details	Flanged (1-1/2" – 36")
Pressure Rating	Class 150 lb. (250psi Max.)
Temperature Range	Water to 180°F
Any other wetted metallic parts	Stainless Steel; Bronze; Brass
Coating	Fusion Bonded Epoxy Coating (Interior & Exterior); ANSI / NSF 61 Approved / AWWA coating specifications C116-03.
Accessories	Position Indicator, Opening Speed Controls, Isolation Valves, Gauges

C. The main valve shall be hydraulically operated, single diaphragm actuated, globe pattern. The valve shall consist of three major components; the body with seat installed, the cover with bearing installed and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating the operating pressure from line pressure. Packing glands, stuffing boxes and/or rolling diaphragm technology will not be permitted and there shall be no

pistons operating the main valve or pilot controls. No fabrication or welding shall be used in the manufacturing process. Y-pattern valves shall not be permitted. Main valve shall comply with NSF/ANSI Standard 61 and certified lead free to NSF/ANSI 372 as a safe drinking water system component.

D. End Connections for control valve shall be flanged per ASME/ANSI B16.42, Class 150.

E. No separate chamber(s) below the diaphragm shall be allowed between the main valve cover and body. No fabrication or welding shall be used in the manufacturing process.

The valve shall contain a resilient, synthetic rubber disc with a rectangular cross-section contained on three and one half sides by a disc retainer and forming a tight seal against a single removable seat insert. No 0-ring type discs (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the discs firmly in place. The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hours-glass shaped disc retainers shall be permitted and no V-type or slotted-type disc guides shall be used.

The diaphragm assembly containing a non-magnetic stainless steel stem; of sufficient diameter to withstand high hydraulic pressures and shall be fully guided at both ends by a bearing in the main valve cover and an integral bearing in the valve seat. The valve seat shall be a solid, one-piece design and shall have a minimum five-degree taper on the seating surface for a positive, drip-tight shut off. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating the operating pressure from the line pressure. No bolts or cap screws shall be permitted for use in the construction of the diaphragm assembly.

The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The diaphragm's center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm must withstand a Mullins Burst Test of a minimum of 600 X per layer of nylon fabric and shall be cycled tested 100,000 times to insure longevity. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position. Bellofram type rolling diaphragms shall not be permitted.

The main valve seat and stem bearing in the valve cover shall be removable. The main valve seat shall be retained by flat head machine screws for ease of maintenance. The lower bearing of the valve stem shall be contained concentrically within the seat and shall be exposed to the flow on all sides to avoid deposits. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the valve body shall be permitted. Cover bearing, disc retainer and seat shall be made of the same material. All necessary repairs and/or modifications

other than replacement of the main valve body shall be possible without removing the valve from the pipeline. The valve shall be designed such that both the cover assembly and internal diaphragm assembly can be disassembled and lifted vertically straight up from the top of a narrow opening/vault. Y-pattern valves shall not be permitted. The seat shall be of the solid one piece design. Two piece seats or seat inserts shall not be permitted. Packing glands and/or stuffing boxes shall not be permitted.

F. The pressure reducing pilot control shall be a direct-acting, adjustable, spring-loaded, normally open, diaphragm valve designed to permit flow when controlled pressure is less than the spring setting. The pilot control is held open by the force of the compression on the spring above the diaphragm and it closes when the delivery pressure acting on the underside of the diaphragm exceeds the spring setting. The pilot control system shall include a strainer and a fixed orifice closing speed. No variable orifices shall be permitted. The pilot system shall include an opening speed control on all valves sizes 3" and smaller as standard equipment. The pilot control shall have a second downstream sensing port which can be utilized to install a pressure gauge. A full range of spring settings shall be available in ranges of 0 to 400 psi. Pilot shall comply with NSF/ANSI 61 and certified lead free to NSF/ANSI 372 as a safe drinking water system component

pilot control system shall include a strainer and a fixed orifice closing speed. No variable orifices shall be permitted. The pilot system shall include an opening speed control on all valves sizes 3" and smaller as standard equipment. A full range of spring settings shall be available in ranges of 0 to 400 psi. Pilot to be manufactured by control valve manufacturer.

G.

Component	Material
Body & Cover	Bronze, Low Lead CuZn21Si3P or UNS C87850
Pilot Trim	Brass & Stainless Steel 303
Rubber	Buna-N®
Connections	FNPT
Pressure Rating	400 psi Max.
Temperature Range	Water to 180°F Max.
Control Tubing	Stainless Steel
Control Fittings	Stainless Steel

H. Each Control Valve and associated pilot(s) shall be provided with an identifying nameplate.

G08.06 BALL VALVES

A Type V304 Ball Valve, 2-Inch and Smaller, for General Water and Air Service:

1. All-bronze, three-piece body type, threaded ends, full bore ports, Teflon seat, blowout-proof stem, hand lever operator, rated 150 psi SWP, 400-pound WOG minimum.
2. Manufacturers and Products:
   a. Apollo; 82-100-01 Series.

b. Nibco, Inc.; T-595-Y.

B. Type V330 PVC Ball Valve, 2-Inch and Smaller:
   1. Rated 150 psi at 73°F, with ASTM D1784, Type I, Grade 1 polyvinyl chloride body, ball, and stem, end entry, double union design, solvent-weld socket ends, elastomer seat, Viton or Teflon O-ring stem seals, to block flow in both directions.
   2. Manufacturers and Products:
      a. Nibco; True-Bloc.
      b. ASAHI America; Duo-Bloc.

C. Type V331 PVC Ball Valve, 3 and 4-Inch:
   1. Rated 150 psi at 73°F, with ASTM D1784 Type I, Grade 1 polyvinyl chloride full port body, Teflon seat, Viton O-ring stem, face and carrier seals, end entry design with dual union, solvent-weld socket ends, or single union ball valve with flanged ends drilled to ANSI B16.1.
   2. Manufacturers and Products:
      a. Nibco; TrueBloc True Union.
      b. Chemtrol; TrueBloc True Union.
      c. George Fischer.

G08.07 PAYMENT

All valves installed under this section of these specifications will not be paid for separately, but the cost thereof shall be included in the proper items of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G09 - MECHANICAL PAINTING

G09.01 SCOPE

A. This specification covers the requirements for painting pumps, motors, exposed pipe, valves and fittings and supports at the High Service Pump Station as specified herein and shown on the Plans. Painting shall be required for newly installed pumps, piping and appurtenances and any areas damaged during construction.

G09.02 GENERAL

A. The work to be performed under this section of the specifications shall consist of furnishing all labor, materials, and equipment necessary for painting pumps, motors, exposed pipe, valves and fittings and supports at the High Service Pump Station as specified herein and shown on the Plans.

B. Metal surfaces to be painted shall be sound, clean and free of harmful scale, rust, dirt, oil, grease, moisture, or any other foreign matter which might, in any way, lessen the life or usefulness of the coating. All metal shall be smooth and free from blisters, rough corners, pits, dents, or other imperfections before painting. Pits and dents shall be filled and the metal ground smooth where required.

C. Paints and similar materials shall be mixed in vessels of adequate capacity. All paints shall be thoroughly stirred before being taken from containers and shall be kept stirred while using. All ready-mixed paints shall be applied exactly as received from the manufacturer without addition of any kind of a drier or thinner except in accordance with manufacturer's recommendations.

D. All painting at the site of the work is hereby defined as field painting and the Owner's Representative shall determine where and when painting may be done. All surfaces to be painted shall have their readiness for painting approved by the Owner before work is started.

E. No painting shall take place unless the atmospheric temperature is at least 50 degrees Fahrenheit and rising, or when the surface temperature is below the dew point, or when relative humidity is above 85%, unless approved by representatives of Owner and Paint Manufacturer. Painting shall not proceed if the temperature is expected to fall below 32 degrees Fahrenheit before the paint has dried.

F. Painting found defective shall be removed and the surface repainted as directed by the Owner at the Contractor's expense.

G. Before final acceptance of the project, any damaged painted surfaces shall be touched up or repainted, as directed by the Owner at the Contractor's expense.

G09.03 FIELD PAINTING

A. It is the intent of this section of the specifications that all metal work be properly painted whether or not specific mention is made hereinafter of each individual part.

B. The number of coats shall be not less than called for hereunder. Letter designation of various coatings refers to the designation given in the following listing (Section 9.04). Surfaces to be painted include, but are not limited to, the following, colors to be selected by Owner:

1. All pumps, motors, base plates, exposed cast-iron or ductile-iron and steel pipe, steel members, valves, fittings and appurtenance that are not directly above a water surface shall receive in addition to the shop coat one (1) prime field coat of (a) and two (2) field coats of (b), color to be selected by Owner. Color shall match the existing color scheme for Potable Water currently employed by the City.

G09.03 PAINTS

A. (a) TNEMEC 37H-77 Chem-Prime, or Amercoat 5105 Primer, 2 mil dry film thickness.

B. (b) TNEMEC 66-color, or Amercoat 5450, 5 mil dry film thickness each coat.

C. Approved materials of other manufacturers which are equivalent in all respects to the brands named above, may be substituted.

D. The Contractor shall furnish six (6) color samples to the Owner for selection of paint colors.

G09.04 CLEANING AND PREPARATION OF SURFACES

A. General

1. All surfaces to be painted shall be prepared in a workmanlike manner with the objective of obtaining a clean and dry surface. No more sandblasting or surface preparation than can be coated or painted in a normal working day will be permitted.

2. The preparation of steel surfaces shall be in accordance with the applicable specifications prepared by the Steel Structures Painting Council (SSPC).

3. Care shall be exercised not to damage adjacent work during sandblasting operations. Surfaces not intended to be painted shall be suitably protected from the effects of cleaning and painting operations. Fabricated, assembled items which are normally cleaned and painted in the shop in accordance with the manufacturer's standard practice will be considered for exemption from the detailed cleaning and painting requirement set forth herein. Removable equipment adjacent to surfaces to be painted shall, if necessary, be disconnected and moved to permit cleaning and painting of said surfaces, and replaced by workmen skilled in the trades involved.

4. Prime and finish coats which are listed in the Painting Schedule are compatible finishes. The Contractor shall follow the recommendations of the paint manufacturers, subject to the approval of the Engineer, to insure a good bond between coats.

B. Inspection of Surface Preparation. All details of surface preparation may be inspected to ensure that surfaces have been properly cleaned, that treating solutions are of the specified type and concentration, and have been properly applied, that treated surfaces are free from un-neutralized residue, and that surfaces are dry and ready to receive paint.

G9.05 PAINT APPLICATION

A. General. All work shall be done in a workmanlike manner, so that the finished coating wil1 be free from holidays, pin holes, bubbles, runs, drips, ridges, waves, laps, unnecessary brush marks and variations in color, texture and gloss. All coats shall be applied in such manner as to produce an even film of uniform thickness.

B. Labeling, Storage, Mixing and Film Thickness. All materials shall be brought to the painting job site in the original sealed and labeled containers of the paint manufacturer. The painter shall apply each coating at the rate and in the manner specified by the manufacturer. If material has thickened or must be diluted for application by spray gun, the coating shal1 be built up to the same film thickness achieved with undiluted material. Deficiencies in film thickness shall be corrected by the application of additional coats of paint. Paints which can be harmed by exposure to cold weather shall be stored in heated shelters. During application, the paint in the spray tank or other working container shall be not less than 50 degrees Fahrenheit.

C. Atmospheric Conditions. No paint shall be applied when the surrounding air temperature, as measured in the shade, is below 40 degrees Fahrenheit. No paint shall be applied when the temperature of the surface to be painted is below 40 degrees Fahrenheit. Paint shall not be applied to wet or damp surfaces, and shal1 not be applied in rain, snow, fog or mist, or when the relative humidity exceeds 85 percent or when it can be anticipated that the air temperature will drop below 40 degrees Fahrenheit within 18 hours after the application of the paint. Dew or moisture

condensation should be anticipated, and if such conditions are prevalent, painting shall be delayed until mid-morning to be certain that the surfaces are dry**.** The day's painting shall be completed well in advance of the probable time of day when condensation will occur, in order to permit the film an appreciable drying time prior to the formation of moisture. During periods of inclement weather, painting may be continued by enclosing the surface with temporary shelters and applying artificial heat, provided the minimum air, surface and paint temperatures prescribed above are maintained. Paint shall not be applied to surfaces which are hot enough to cause blistering or pinholing of the film.

D. Protection of Paint Surfaces. Where shelter or heat is provided for paint surfaces during inclement weather, such protective measures shall be maintained until the paint film has dried, or discontinuance of the measures is authorized. Items which have been painted shall not be handled, worked on, or otherwise disturbed until the paint coat is completely dry and hard. After delivery at the site of permanent erection or installation, all shop-coated metal work shall be stored out of contact with the ground in such a manner as will minimize the formation of water-holding pockets and in such a location as will minimize soiling, contamination and deterioration of the paint film. Shop-coated metal shall be repainted or retouched from time to time with the specified paint when it becomes necessary to maintain the integrity of the film.

E. Contacting Surfaces. When riveted or bolted contact is to exist between surfaces of ferrous or other metal parts of substantially similar chemical composition, such surfaces will not be required to be painted. Contacting surfaces formed by high-strength bolt connections shall not be painted. Where an electrical potential is apt to exist between metal surfaces or unlike chemical composition in riveted or bolted contact, each of the contacting surfaces shall be cleaned, pretreated, and given one coat of primer, all as specified for the particular metals involved. Where a non-metal surface is to be in riveted or bolted contact with a metal surface, the contacting surfaces of the metal shall be cleaned, pretreated if required, and given three coats of the specified primer.

F. Method of Paint Application. On metal surfaces, each coat of paint shall be applied at the rate specified by the manufacturer to achieve the minimum dry mil thickness required. On concrete and/or masonry, application rates will vary according to surface texture. However, in no case shall the manufacturer's stated coverage rate be exceeded. On porous surfaces, a protective and decorative finish shall be achieved. Deficiencies in film thickness shall be corrected by the application of an additional coat(s) of paint. Where conditions are other than normal because of the weather or because painting must be done in confined spaces, longer drying times will be necessary. Additional costs of paint shall not be applied, nor shall units be returned to service until paints are thoroughly dry. Where thinning is necessary, only the products of the manufacturer furnishing the paint, and/for the particular purpose, shall be allowed, and all such thinning shall be done strictly in accordance with the

manufacturer's instructions. Where two or more coats are specified, first coat shall be tinted a minimum of three shades lighter than the color specified, and progressively to the final coat, and subject to approval. As an alternate, the intermediate coats may be white or gray, depending on the co]or of the finish coat.

G. Coating Progress. Where field painting on any type of surface has commenced on any portion of the work, the complete painting operation, including priming and finishing coats, on that portion of the work, shall be completed as soon as practicable without prolonged delays. Sufficient time as recommended by the paint manufacturer shall elapse between successive coats to permit them to dry properly for recoating and this minimum drying period shall be modified as necessary to suit adverse weather conditions. Maximum elapsed time between successive coats shall not exceed the time recommended by the coating manufacturer The application of another coat of paint shall not cause such film irregularities as lifting or loss of adhesion of the undercoat, and the undercoat shall have dried sufficiently so as not to retard the drying of the next coat. At all times prior to final acceptance of the work when, it becomes necessary, the integrity and continuity of all coats, including coats which have chalked unduly or otherwise deteriorated, shall be reestablished by retouching or repainting, using paints identical with those maintained. At the time of application of each successive coat, undercoats shall be cleaned of dust, grease or any foreign matter, which might adversely affect intercoat adhesion, by means of air blast, solvent cleaning or other approved means. Field coats on metal shall be applied after erection, except as otherwise specified and except for surfaces to be painted which will become inaccessible after erection.

H. Drying Time Prior to Immersion. Drying time prior to immersion, installation or otherwise handling painted surfaces shall be as recommended by the paint manufacturer. Vinyl type paint systems shall be allowed a final dry as long as practicable.

I. Coverage and Film Thickness. Coverage and film thickness shall be as recommended by the paint manufacturer, unless otherwise prescribed in the schedule. On metal surfaces, the painter shall apply each coat of paint at the rate specified or recommended by the manufacturer to achieve the minimum dry mil thickness required.

J. Inspection. All painting will be inspected for applied coating thickness and for pinholes and holidays. Such inspection will not relieve the Contractor of the responsibility of furnishing qualified labor and materials in strict accordance with the specifications. The Contractor shall also furnish an approved type of low voltage dry mil gauge apparatus to measure the dry film thickness. The Elcometer Thickness Gauge shall be furnished by the Contractor for inspection. The Contractor shall also furnish holiday detector devices. Holiday detector devices shall be approved low-voltage type. All of the above inspection gauges shall be furnished and on the job before painting operations to proceed, and shall remain on the job until its

completion and acceptance. The Contractor or his representative shall instruct on the proper use and
care of all such gauges.

The above required testing gauges furnished are returnable to the Contractor upon completion of the job. The cost of furnishing all of the above required gauges shall be borne by the Contractor.

G09.06 COLOR SELECTION AND PIPE MARKINGS

A. All exposed ductile iron piping and exposed plant water piping shall be color coded with paint and labeled as follows:

LETTERS	COLOR OF PIPE
Potable Water	Light Blue

B. In addition to color coding, exposed piping shall also be marked with colored adhesive-backed bands which include a directional arrow. Placement of bands shall be in accordance with ANSI/OSHA requirements, as well as those of the State, except where a more stringent requiremnet is herein required. The Cntractor shall furnish and install the lable bands at the locations which are clearly visible and are spaced so an observer can easily identify the contents of all pipes, and normal direction of flow. IN addition, they shall be placed at each point where the pipe enters or exits a floor, fround surface, wall or ceiling. Letters shall be at least ¾-inch in height and arrows at least ½ -inch in width and 4 inches long. Pipe lables shall be of the general style and quality of those supplied by Seton Name Plate Corp., New Haven, CT, or approved equal.

G09.07 TESTING AND OBSERVATION

A. All surfaces prepared in the field shall be observed by the Owner for adequate surface preparation as defined above prior to application of paint coating. All surfaces to be painted in the field shall have their readiness for painting approved by the Owner before work is started.

B. Adequate film building shall be subject to observation procedures by using a wet film gauge during painting and/or a Mikrotest or equivalent dry film gauge after painting. Contractor shall supply applicable gauges for use by Owner's representative during completion of the work.

G09.08 PAYMENT

A. No separate payment will be made for work performed in accordance with this section of the specifications, and the cost thereof shall be included in the lump sum amount of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G10 - CONCRETE

G10.01 DESCRIPTION OF WORK

A. This specification covers the requirements for the manufacture, transporting, placing, jointing, finishing and curing of concrete of the structures included in the plans and specified herein.

G10.02 GENERAL

A. Submittals

The Contractor shall submit the following for review by the Owner:

1. Concrete mix designs prepared by a testing laboratory acceptable to the Owner.

2. Joint filler technical data.

3. Curing materials technical data.

4. Layout of construction joints locations prior to the submittal of steel reinforcement shop drawings.

5. Sieve analysis of aggregates.

6. Los Angeles Machine test results.

7. Elastomeric waterproof coating technical data.

B. Standards

The following standard specifications are a part of these specifications:

ACI 301, Specifications for Structural Concrete for Buildings.

ACI 347, Recommended Practice for Concrete Formwork.

ACI 318, Building Code Requirements for Reinforced Concrete.

ACI 305R, Hot Weather Concreting.

ACI 306R, Cold Weather Concreting.

ACI 308, Standard Practice for Curing Concrete.

ACI 309, Standard Practice for Consolidation of Concrete.

ACI 304, Guide for Measuring, Mixing, Transporting and Placing Concrete.

ACI 304.2R, Placing Concrete by Pumping Methods.

ACI 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.

G10.03 MATERIALS AND PRODUCTS

A. Portland Cement

ASTM C 150, Type I cement shall be used. Portland cement used shall be made by a well-known manufacturer and produced by not more than one plant.

B. Water

Mixing water shall be potable, unless approved by Owner.

C. Fine Aggregate

1. Fine aggregate shall conform to ASTM C 33 and shall consist of natural sand or a mixture of natural sand and not more than fifty percent (50%) of stone screenings.

2. Stone screenings shall consist of clean, hard, durable un-coated fragments resulting from the crushing of stone.
3. Fine aggregates shall be free of any materials that are deleteriously reactive with the alkalies in the cement.

D. Coarse Aggregate

1. Coarse aggregate shall conform to ASTM C 33 Size No. 467, No. 57 or No. 67 for all concrete in direct contact with sewage or sewage effluent. Size No. 7 may be used in other concrete.

2. Coarse aggregates shall be free of any materials that are deleteriously reactive with the alkalies in the cement.

3. Coarse aggregates shall have a percent of wear of not more than forty-five (45) as determined in accordance with ASTM C 131, Resistance to Abrasion of Small Size Coarse Aggregate by use of the Los Angeles Machine.

4. Nominal maximum size of coarse aggregate shall not be larger than one-fifth of the narrowest dimension between sides of the forms, one-third of the depth of slabs, or three-fourths of the minimum clear spacing between reinforcing bars.

5. Where lightweight structural concrete is indicated on the drawings, coarse aggregate shall conform to ASTM C 330.

E. Admixtures

1. Only admixtures produced by established reputable manufacturers and used in compliance with the manufacturer's printed instructions may be used.

2. Only admixtures which have been incorporated and tested in the accepted mixes shall be used unless otherwise authorized in writing by the Owner.

3. Concrete admixtures shall conform to the following specifications:

4. Air Entraining Admixtures - ASTM C 260.

5. Specifications for Chemical Admixtures for Concrete - ASTM C 494.

6. Use of calcium chloride is not permitted.

F. Curing Materials

1. Water shall meet requirements for concrete mixing water and shall not stain or leave unsightly residue.
2. Liquid curing materials shall conform to specifications for Liquid Membrane-Forming Compounds for Curing Concrete - ASTM 309.
3. Sheet materials shall conform to specifications for Sheet Materials for Curing Concrete - ASTM C 101.

G. Non-Shrink Grout

Non-shrink grout shall contain no iron filings and shall be Embeco Non-Shrink Mortar, Halco Non-Shrink Grout, or an approved equal.

G10.04 STORAGE AND HANDLING OF MATERIALS

A. Sacked cement shall be stored in a suitable ventilated, weathertight building which will protect the cement from dampness and placed in such a manner that will permit easy access for proper inspection and identification of each shipment. Store cement clear from floor or ground to prevent absorption of moisture.

B. Suitable means shall be taken during handling and storage of aggregates to insure that intrusion of foreign materials and segregation of the coarse and fine aggregates does not occur and the grading is not affected. Store on wooden platforms, metal sheets or similar material; if stored on the ground, the sites of stockpiles shall be grubbed, cleaned of all vegetation and leveled off, the bottom six (6) inch layer of aggregate shall not be disturbed and shall not be used in the work.

C. At the time of use, aggregates shall be free from frozen or foreign material, such as grass, wood, sticks, burlap, paper or dirt which may have become mixed with the aggregate in stockpiles or in handling.

D. Where coarse aggregates are delivered to the job in two (2) or more sizes or types, each size or type shall be kept separate and not mixed prior to matching.

G10.05 PROPORTIONING AND DESIGN OF MIXES

A. It shall be the responsibility of the Contractor to design the proportions of the concrete mixes within the limits indicated in Table "A" to produce concrete of the consistency and workability required, and to conform to the strength requirements specified.

B. Concrete proportions shall be established on the basis of previous field experience or laboratory trial mixtures as specified in ACI 301, Chapter 3.

TABLE "A"

Class Concrete	"Minimum or Required 28-Day Compressive Strength, PSI (See Quality Control)	Minimum Factor, Sacks Cement (94-lbs) per C.Y. Concrete	Maximum Water per 94 lbs. Cement, Gallons*	Maximum Water per 94 lbs. Cement, Gallons**	Maximum Size of Aggregate	Slump Range In.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
"A"	4,000	6.00	5.2	N/A	1½"	4”-6"
"B"	3,000	5.00	7.0	7.5	1½"	4”-6"
"C"	2,000	4.50	6.5	8.0	3"	2”-6"

* With air-entraining agent added.
** Without air-entraining agent added.

C. Class "A" concrete, as indicated in Table "A" shall be used for all reinforced concrete work included in this contract except as otherwise indicated on the Plans or as hereinafter provided.

D. The maximum quantity of water per 94 pounds of cement as specified shall include the free water in the aggregates, not including moisture absorbed by the aggregates.

E. In proportioning the mix and establishing the permissible slump, the Contractor shall make allowances for the water reducing potential of the admixtures, if used in the concrete, and to the use of high frequency mechanical vibration for compacting the concrete.

F. Mix designs shall be proportioned to result in concrete slump at the point of placement as specified in Table "A".

G. Contractor shall use an independent testing facility acceptable to the Owner for preparing and reporting proposed mix designs.

H. Written reports of proposed concrete mixes shall be submitted to the Owner at least 15 days prior to the start of work. The Contractor shall not begin concrete production until mixes have been reviewed by the Owner. Review of the mix design does not relieve the Contractor of the responsibility for meeting all requirements specified herein.

I. Adjustments to concrete mix designs may be requested by the Contractor when characteristics of materials, job conditions, weather, test results or other circumstances warrant; at no additional cost to and when acceptable to the Owner. Laboratory test data for revised mix designs and strength results shall be submitted to and accepted by the Owner before using the revised mixes.

G10.06 FORMING OF CONCRETE

A. General

1. Design and construction of all form work is the responsibility of the Contractor.

2. For all surfaces which are exposed in the finished work, forms shall be of steel, metal surfaces on wood, plywood, pressed boards, or well-seasoned boards, dressed all over and smooth. They shall be so built that when removed, the concrete will be left free from offsets, fins, ridges, or other unsightly defects.

3. Formwork shall be constructed so as to ensure that the concrete surfaces will conform to the tolerances of Section 3.3.1, "Recommended Practice for Concrete Formwork" (ACI 347). Forms shall be sufficiently tight to prevent leakage of mortar. The size and spacing of studs and wales shall be determined by the nature of the work and the height to which concrete is placed. Joints shall be snug, and shall occur at the designated locations only.

4. All forms shall be cleaned and inspected immediately prior to placing concrete. Deformed, broken, or defective forms shall be removed from the

work. Temporary openings shall be provided where necessary to facilitate cleaning and inspection just prior to placing concrete.

5. Should the forms show any sign of yielding, spreading or otherwise becoming displaced from correct alignment of position during or after the placing of concrete, they shall be corrected immediately by adjustment or bracing to the extent necessary, or, if required, shall be removed in part or in their entirety and rebuilt or reset.
6. The entire inside surfaces of forms shall be oiled with an approved, non-toxic form oil, or shall be thoroughly wetted just prior to placing concrete.

7. All exposed corners and edges shall have a formed ¾-inch chamfer unless otherwise indicated on the Plans.

8. The Contractor shall provide openings in formwork to accommodate the work under this and other sections and build into the formwork all items such as sleeves, anchor bolts, inserts and all other items to be embedded in concrete for which placement is not specifically provided under other Sections.

B. Plain Sheathing Forms

1. Wooden forms for surfaces not exposed to view may be built of sound No. 1 yellow pine, Douglas fir, or equivalent acceptable lumber, dressed on all sides and neatly fitted. Matched lumber, shiplap, or other satisfactory joint lumber shall be used throughout, and tongue and grooved material shall be used where required.

2. The sheathing shall be erected in level random courses. All vertical joints shall be squared, and all horizontal joints shall be level and matched throughout the entire job. Except for panel forms, vertical joints shall not exceed the width of one board and shall be staggered at least thirty-two inches (32") and made on the center of a stud. Inside forms shall not be placed until exterior forms have been checked, or vice versa.

3. Forms for beam and girder soffits shall be constructed with nominal 2-inch lumber, and all joints shall be tight and even. Beam and girder soffits shall be sufficiently braced, shored, and wedged to prevent deflection.

C. Plywood Forms

Forms for all interior exposed concrete surfaces and designated areas of exterior exposed concrete surfaces shall be constructed with minimum thickness 3/4-inch plywood for straight sections and 1/2-inch plywood for curved sections. Plywood shall be made with a waterproof glue and manufactured especially for concrete form work. Edges shall be square in both directions and adjoining panels shall match in thickness, width, and length. Full size sheets of plywood shall be used, except where otherwise required or where smaller pieces will cover an entire area. Forms shall be placed so that markings will be symmetrical. Plywood shall be thoroughly oiled on contact faces and edges with raw linseed oil or other approved

form lacquer. Surplus oil shall be wiped off forms before reinforcing steel is placed and while the surfaces are accessible.

D. Steel Forms

If steel forms are proposed, they shall be approved prior to use. The forms shall be accurately constructed in a standard size and in such minor multiple widths and lengths as required. Steel forms shall be coated before each use, with a light, clear, paraffin-base oil, or other acceptable commercial preparation which will not discolor the concrete. Plates shall be wire brushed after each use.

E. Carton Forms

1. Where indicated on the Plans, a structural void at least 6 inches deep shall be provided between the earth and concrete through the use of carton forms which will remain in place and retain their strength until after the concrete has cured. Forms shall be corrugated fiberboard carton forms as manufactured by the Container Corporation of America and fabricated by Savway Concrete Forms, Inc., Dallas, Texas or approved equal.

2. The cover, ribs, and caps of forms shall be constructed of durable-wall corrugated fiberboard, laminated with waterproof adhesive. Covers and end caps shall be coated on the outside with paraffin containing polyethylene. All fabricated forms shall be capable of supporting a minimum load of 150 pounds per square foot.

3. Forms shall be securely held in position and protected from excessive moisture or other damage prior to and during the concreting operation. Free falls of wet concrete in excess of 2 feet, 6 inches will not be permitted on carton forms.

4. Voids below grade beams, walls, and slabs shall be closed by a monolithic extension of the concrete member at its edges, or by precast concrete blocks which extend at least 6 inches into the subgrade to retain the adjacent soil.

F. Form Ties

Only form ties, hangers, and clamps indicated on the forming plans shall be used, and they shall be of such type that no metal will be closer than 1½ inches from the surface. Wire ties will not be permitted. The assembly should provide cone-shaped depressions at the forms at the surface at least one (1) inch in diameter and 1½ inches deep to allow filling and patching. The spacing of form ties, hangers, and clamps shall be strictly in accordance with manufacturer's directions.

G. Removal of Forms

In general, forms shall not be removed until the concrete has hardened sufficiently to support its own load safely plus any superimposed loads that might be placed

thereon. In any event, forms shall be left in place at least the minimum required length of time specified below, after the placing of concrete in them:

Columns .....48 hours
Side forms for girders and beams .....48 hours
Bottom forms of slabs .....7 days
Bottom forms of beams and girders.....7 days
Walls.....48 hours

G10.07 MIXING AND PRODUCTION OF CONCRETE

A. General

1. All concrete not placed in the work within forty-five (45) minutes after addition of water to batch shall be rejected and disposed of by the Contractor at his own cost and expense.

2. The Contractor shall provide access to the mixing plant for inspection by the Owner.

B. Ready Mix Concrete

1. All ready mix concrete shall be batched, mixed and transported in accordance with ASTM C 94.

2. Plant equipment and facilities shall conform to National Ready-Mix Concrete Association "Plan and Delivery Equipment Specification."

3. The production and delivery of ready-mixed concrete shall be such that will provide a continuous finishing operation and in no case more than twenty (20) minutes shall elapse between the depositing of successive batches of concrete in any monolithic unit.

C. Job Site Mixing

Site batched and mixed concrete shall comply with the recommendations of ACI 301, Chapter 7.

D. Control of Admixtures

1. Admixtures shall be charged into the mixer as solutions and shall be measured by means of an acceptable mechanical dispensing device. The liquid shall be considered a part of the mixing water.

2. If two or more admixtures are used, they shall be added separately to avoid possible interaction.

3. Addition of retarding admixtures shall be completed within one (1) minute after addition of water to the cement has been completed, or prior to the beginning of the last three-quarters of the required mixing, which ever occurs first.

E. Cold and Hot Weather Requirements

1. The Contractor shall comply with requirements of ACI 305 "Recommended Practice for Hot Weather Concreting" during hot weather conditions and when ambient temperature is 90 degrees F or above. Concrete deposited in hot weather shall have a placing temperature (not exceeding 90 degrees F) which will not cause difficulty in loss of slump, flash set or cold joints. The ingredients shall be cooled before mixing, or well crushed ice may be substituted for all or part of the mixing water if, due to high temperatures or other climatic factors, any undesirable effects are encountered. Cement shall not be added to the mixtures of water and aggregate when the temperature of the mixture is greater than 100 degrees F.

2. The Contractor shall comply with requirements of ACI 306 during cold weather conditions. Unless the temperature is at least 40 degrees F and rising, the temperature of the concrete when placed shall be at least 55 degrees F. If water or aggregate has been heated, the water shall be combined with the aggregate in the mixer before cement is added.

G10.08 PLACING CONCRETE

A. Preparation Before Placing

1. Before placing of concrete in any portion of a structure, adequate provision shall be made for walkways from which the concrete to be placed can be worked or runways over which the concrete may be transported in buggies, when such are to be used. Buggy runways shall be clear of the reinforcements in slabs or footings. Runways or walkways used for placing or working concrete in walls shall be properly supported and adequate in width for safe use by workmen. Runways shall provide convenient access to the entire length of wall in which concrete is being placed. Hand rails shall be installed on walkways or runways in accordance with OSHA Standards.

2. The Contractor shall remove frost, snow, ice, water and any other foreign materials from forms, secure reinforcement in place, and position joint materials and other embedded items.

3. In cold weather, the Contractor shall have protective blankets ready and heaters operational and in-place prior to placing concrete.

4. In hot weather, when temperature of reinforcing or forms is above 120 degrees F, the Contractor shall spray forms and reinforcement with water just prior to placing concrete.

5. Structural concrete shall be placed only on a firm and unyielding subgrade or sub-base, which is free from all loose material and debris. Subgrade shall be free of frost. The Contractor shall keep subgrade moist at time of concreting. If necessary, dampen with water in advance of concreting. The

Contractor shall allow no free water standing on subgrade nor any muddy or soft sports when concrete is placed.

B. Conveying and Depositing in Forms

1. The Contractor shall handle concrete from mixer to place of final deposit as rapidly as practicable by methods which prevent segregation or loss of ingredients to assure that quality is maintained.

2. To prevent segregation, the Contractor shall deposit concrete in approximately horizontal layers of 18 to 24 inches as near as possible to its final position.

3. Concrete shall not be allowed to drop freely more than four (4) feet or through a cage of reinforcing steel.

4. Chutes used to transport concrete shall have a slope not exceeding one vertical to two horizontal and not less than one vertical to three horizontal. The end of each chute shall be provided with a baffle to help prevent segregation, or the concrete shall be discharged through a tremie or elephant trunk directly into the form.

5. Pumping equipment shall be a suitable type with adequate pumping capacity. Loss of slump in pumping shall not exceed 1½ inches.

6. The Contractor shall consolidate all concrete by vibration, so that concrete is thoroughly worked around reinforcement, around embedded items and into corners of forms eliminating all air or stone pockets which may cause honeycombing, pitting, or places of weakness. The Contractor shall use internal vibrators having a minimum frequency of 8,000 vibrations per minute to consolidate concrete effectively. The Contractor shall not use vibrators to transport concrete within forms. The Contractor shall insert vibrators and withdraw at points approximately 18 inches apart. At each insertion, the Contractor shall allow duration sufficient to consolidate concrete but not sufficient to cause segregation; generally from 5 to 15 seconds. Where concrete is to have an as-cast finish, bring a full surface of mortar against form by vibration process, supplemented if necessary by spading, to work coarse aggregate back from formed surface.

7. While concrete is being placed adjacent to a joint in which a waterstop is specified, care shall be taken to see that the concrete is properly placed and worked along the joint in which the waterstop is held and that the waterstop itself is in the position specified on the drawings and is firmly bedded in mortar on all sides.

8. The concrete comprising each section of wall between joints shall be deposited continuously in layers of such thickness that none will be deposited on concrete which has hardened sufficiently to cause the formation of seams or places of weakness within the section.

C. Joints

1. Joints shall be provided in slabs on grade; locate joints as indicated. If saw cut joints are required or permitted, time cutting properly with set of concrete; start cutting as soon as concrete has hardened sufficiently to prevent aggregates from being dislodged by saw. Complete before shrinkage stresses produce cracking.

2. Other construction joints, not indicated on drawings, shall be located so as to least impair strength of the structure. Place joints in locations approved by the Owner.

3. Vertical construction joints shall be prepared and bonded in accordance with ACI 301, Chapter 6.

G10.09 FINISH OF CONCRETE SURFACES

A. Scope

The provisions of this subsection shall apply to all exposed exterior concrete surfaces and all interior concrete surfaces of conduits and structures whose finish is not specified elsewhere in these specifications or specifically indicated on the Plans.

B. General

1. The exposed tops of walls of structures shall be brought to true level, floated to bring a workable grout to the surface, struck off and releveled where necessary with cement grout of the same proportions as the mortar of the concrete. The wall tops shall then be floated, finished and edged unless otherwise indicated on the Plans. The edger used shall be of ½-inch radius and shall have its flanges ground to a knife edge so as to have as little burr as possible.

2. Slabs shall be edged as appropriate.

C. Finish of Formed Surfaces

1. General

   a. Unless otherwise noted on the drawings, the following finishes shall be used as applicable:

   b. Rough form finish - For exterior wall surfaces of structures, flumes and conduits not exposed to public view up to one foot below grade.

   c. Smooth rubbed finish (or paint type finish at Contractor's option) - For exterior wall surfaces exposed to view and interior wall surfaces of structures, flumes and conduits. Interior wall surfaces which shall receive the Smooth Rubbed Finish shall be all interior surfaces to a point one (1) foot below the minimum water surface

of open vessels containing liquids. Surfaces one foot or more below minimum water surface elevation in vessels containing liquids shall receive a Rough Form Finish. Apply the same finish on all surfaces.

2. Rough Form Finish

Tie holes and defects shall be patched. Fins exceeding ¼-inch shall be chipped or rubbed off. Otherwise, surfaces shall be left with the texture imparted by forms.

3. Smooth Form Finish

a. Use form facing materials which shall produce a smooth, hard, uniform texture on the concrete. Arrange panels in an orderly and symmetrical manner with a minimum of seams.

b. Tie holes and defects shall be patched and all fins shall be completely removed.

4. Smooth Rubbed Finish

a. Provide smooth rubbed finish to surfaces which have received smooth form finish.

b. Surfaces to be rub-finished shall be thoroughly wetted and kept in that condition until the rubbing work of each section is completed.

c. Surfaces shall be rubbed with carborundum blocking or other abrasive and water until fins and any surplus materials have been removed and the surface is uniformly smooth. Grout or mortar shall not be used in the rubbing process and plastering of the surfaces will not be permitted. Rubbing blocks shall be driven by electric or compressed air tools except as hand rubbing is specifically permitted by the Owner.

d. Rubbing of concrete surfaces shall commence within one (1) day after removal of forms.

5. Paint Type Finish

Finish shall be Elastomeric Waterproofing Coating 10 as manufactured by Sherwin Williams or approved equal. Apply one coat in accordance with manufacturer's recommendations, at a coverage of fifty (50) square feet per gallon.

D. Finish of Unformed Surfaces

1. Unless otherwise noted on the drawings, the following finishes shall be used as applicable:

2. Floated Finish - Top surfaces of slabs of all structures, water carrying conduits and liquid containers; surfaces intended to receive roofing, waterproofing membranes or sand bed terrazzo.

3. Troweled Finish - Interior floors intended as walking surfaces or for reception of floor coverings.

4. Non-Slip Broom Finish - Sidewalks, ramps and concrete paved areas (other than roadways and parking area); exterior platforms, steps and landings; exterior and interior pedestrian ramps, exposed floor areas and steps likely to be wet.

E. Finishing Tolerances

1. The following finishing tolerances shall be provided:

2. Class A Tolerance - Finishes shall be true planes within $^{1}/_{8}$-inch in ten (10) feet as determined by a 10-foot straightedge placed anywhere on the slab in any direction.

3. Class B Tolerance - Finishes shall be true planes within ¼-inch in ten (10) feet as determined by a 10-foot straightedge placed anywhere on the slab in any direction.

4. Class C Tolerance - Finishes shall be true planes within ¼-inch in two (2) feet as determined by a 2-foot straightedge placed anywhere on the slab in any direction.

5. Tolerances shall be checked with a 10-foot straightedge for Class A or B tolerance and with a 2-foot straightedge for Class C tolerance applied at no less than two different angles.

F. Floated Finish

The top of the slab shall be screeded to grade and cross section. Concrete shall not be worked further until ready for floating. Begin floating when water sheen has disappeared and when surface has stiffened sufficiently to permit operation of float. Use a wood float only. Float to a surface within Class C tolerance. No further finish will be required on top slabs of structures of conduits which are to be buried. For all other slabs, float to a surface within Class B tolerance and refloat immediately to a uniform sandy texture.

G. Troweled Finish

1. Surface shall first receive floated finish. It shall next be power troweled, and finally hand troweled. Begin final troweling when the surface produces a ringing sound as trowel is moved over surface.

2. Finished surface shall be essentially free of trowel marks, and uniform in texture and appearance. Interior floor surfaces of administrative and similar

areas shall be plane to a Class A tolerance. Other surfaces shall be plane to a Class B tolerance.

H. Nonslip Broom Finish

Immediately after the concrete has received a floated finish, it shall be given a coarse transverse scored texture by drawing a fiber-bristle broom across the surface.

G10.10 CURING AND PROTECTION OF CONCRETE

A. General

1. Curing shall commence immediately following initial set or completion of surface finishing.

2. Standard Portland cement concrete surfaces normally exposed to the atmosphere shall be protected against too rapid drying by curing for a minimum period of seven (7) days. Similarly exposed high-early-strength concrete surfaces shall be cured for a minimum period of three (3) days.

B. Curing of Formed Surfaces

The Contractor shall cure formed surfaces, including the undersides of beams, supported slabs and other similar surfaces by moist curing. Minimize moisture loss from surfaces placed against forms by keeping forms wet until they can be safely removed. After form removal cure concrete until end of time prescribed. Vertical surfaces shall be protected from too rapid drying by covering with burlap.

C. Curing of Unformed Surfaces

1. For concrete surfaces not in contact with forms, one of the following procedures shall be applied immediately after completion of placement and finishing:

2. Ponding or continuous sprinkling.

3. Application of waterproof sheet materials conforming to ASTM C 101.

4. Application of curing compound conforming to ASTM C 309.

5. Apply curing materials in accordance with manufacturer's recommendations.

6. Apply curing compound immediately after water sheen has disappeared from surface. Curing compound shall not be used on any surface against which additional concrete or other material is to be bonded.

7. Curing materials shall, when tested in accordance with the method of "Test for Water Retention Efficiency of Liquid Membrane-Forming Compounds and Impermeable Sheet Materials for Curing Concrete", ASTM C 156, be

effective in limiting the water loss in the concrete test specimens to 3½ percent when applied at the rate recommended by the manufacturer.

D. Protection From Mechanical Injury

1. During the curing period, protect concrete from damaging mechanical disturbances, such as load stresses, heavy shock, and excessive vibration, and from damage by rain or flowing water.

2. Protect all finished concrete from damage by subsequent construction operations.

G10.11 CONCRETE REPAIRS

A. All honeycomb, rock pockets and voids over ½-inch diameter shall be removed down to sound concrete. The area to be patched and an area at least six inches wide surrounding it shall be dampened to prevent absorption of water from the patching mortar.

B. A bonding grout of 1 part cement to 1 part fine sand passing the No. 30 sieve, mixed to the consistency of thick cream, shall be brushed into the surface after surface water has evaporated. The patching mixture shall be made of the same materials as the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2½ parts sand by damp loose volume. The quantity of mixing water shall be no more than necessary for handling and placing. Patching mortar shall be mixed and allowed to stand with frequent manipulation with a trowel until it has reached the stiffest consistency that will permit placing.

C. Apply patching mortar when bonding grout begins to lose water sheen. Mortar shall be thoroughly consolidated and struck off leaving patch slightly higher than surrounding area. Finish and cure in same manner as adjacent concrete.

D. The Contractor shall thoroughly clean and dampen all tie holes.

E. Tie holes shall be grouted solid with non-metallic non-shrinking grout. Tie holes shall be filled from the large end of the cone-shaped hole and packed solid by rodding.

G10.12 QUALITY CONTROL

A. Tests on Concrete

1. As the work progresses, concrete shall be sampled in accordance with ASTM Method of Sampling Fresh Concrete (ASTM C 102).

2. Slump tests shall be made according to ASTM Method of Test for Slump of Portland Cement Concrete (ASTM C 143).

3. Compression test specimens shall be made and cured according to ASTM Method of Mixing and Curing Concrete Test Specimens in the Field

(ASTM C 31). Not less than four compression specimens shall be made for each test at each age (Specifications for Ready-Mixed Concrete, ASTM C 94), nor less than one test for each 50 cubic yards of concrete of each class. At least one test per day shall be made for each class of concrete used that day. These specimens shall be cured under laboratory conditions. Additional specimens cured under job conditions may be required when, in the opinion of the Engineer, there is a possibility of the surrounding air temperature falling below 40 degrees F or rising above 90 degrees F.

4. Specimens shall be tested according to ASTM Method of Test for Compressive Strength of Cylindrical Concrete Cylinders (ASTM C 39).

5. Not less than two specimens shall be tested at seven (7) days and not less than two specimens at twenty-eight (28) days after pouring.

6. If the average strength of any three consecutive tests of laboratory-cured cylinders representing each class of concrete falls below required compressive strengths as indicated in Table "A", or if more than 10 percent of strength tests have values less than the required strength, the Owner shall have the right to order a change in the mix proportions for the remaining portion of the structure or project. If the average strength of the job-cured cylinders falls below the required strength, the Owner shall have the right to require changes in conditions of temperature and moisture necessary to secure the required strength. He may require test in accordance with ASTM Methods of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete (ASTM C 42) or order load tests to be made on the portions of the structures so affected.

7. In the event that changes are required in the water-cement ratio specified, the cost of such changes shall be borne by the Contractor.

8. Contractor shall furnish samples of aggregates to the testing laboratory. All concrete required for testing shall be furnished by the Contractor. No additional compensation will be paid the Contractor for concrete so used.

9. Owner shall normally pay for services of testing laboratory in connection with test made in the field or laboratory on concrete. Any testing or retesting required as a result of actual or apparent failure of concrete to fulfill specification requirements shall be paid for by the Contractor.

B. Acceptance of Work

1. Completed concrete work which fails to meet one or more requirements of this specification will be considered rejected until it has been repaired in a manner acceptable to the Owner.

2. If rejected concrete work cannot be brought into compliance by repairing, work may be remedied by one of the following:

   a. Structural analysis or testing when strength of structure is deficient.

b. Removal and replacement of concrete.

c. Reinforcement of the structure.

d. Contractor shall pay all costs of additional testing and/or engineering at no additional expense to Owner.

3. Contractor shall repair or replace rejected work at no additional cost to Owner.

4. Failure to detect any defective work shall not in any way prevent later rejection when such defect is discovered.

G10.13 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work in accordance with this section of the specifications, and the cost thereof shall be included in the proper item of the Proposal and Bid Schedule.

B. The placement of concrete in excess of that shown in the Plans, which is approved in writing in advance by the Owner, will be paid for under the proper items in the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G11 - FINISH GRADING AND GRASS PLANTING

G11.01 GENERAL

A. The Contractor shall perform finish grading as shown on the plans and described herein. The Contractor shall also provide all equipment and materials required, and shall develop and present to the Owner a Bermuda grass ground cover at the plant site.

B. It is the intent of these specifications that areas to be grassed beyond those specifically shown on the Landscaping plans shall include the slopes of all new embankments, the ground surrounding proposed buildings and plant structures, and those grassed areas of the existing plant grounds which are disturbed during proposed construction.

C. It shall be understood and agreed that the actual limits of areas to be grassed shall be established on the site by the Owner.

D. The hydromulching system of grass planting is described herein. Other procedures such as sodding or live sprigging may be used if approved by the Owner. The system used shall prevent erosion of topsoil until adequate ground cover develops and serves to control erosion.

G11.02 FINISH GRADING

A. Finish grading shall involve bringing final ground surfaces to contour elevations shown on the plans, including placement of topsoil as described herein.

B. Placement of structural fill, road subgrade, and area or site fill is described under other sections of these Specifications.

C. Topsoil shall be used for the upper six (6) inches of soil in the finished plant site. It shall be supplied from stockpiled topsoil from the site or other local sources. Approximately eight (8) inches, loose measure, of topsoil shall be placed in order to obtain the 6-inch layer of consolidated topsoil. Topsoil shall be lightly compacted. The Owner may require tilling of topsoil, if he feels it is over-compacted, prior to grass planting.

G11.03 GRASS PLANTING

A. Fertilizer

18-18-5, (Nitrogen, Phosphoric Acid, Potash) show release granular at a rate of 25 pounds per 1000 square feet.

B. Water

The Contractor shall provide water necessary for grass planting and maintenance until acceptance by the Owner.

C. Planting Seasons

Grass planting by sodding, sprigging, or hydromulching shall normally be done between May 1 and September 15.

D. Hydromulching

Grass planting by hydromulching shall consist of applying water, Bermuda grass seed, fibrous mulch, and fertilizer to initiate grass cover.

G11.04 MAINTENANCE OF DEVELOPING GRASS

A. The Contractor shall water and maintain all grassed areas until final acceptance. He shall also re-fertilize at the rate of 1 lb. of nitrogen and 1 lb. of phosphorous per 1,000 square ft. every 60 days until the grass is accepted.

B. Areas which, due to settling or improper leveling, do not have positive drainage shall be re-leveled with topsoil and replanted with grass.

C. Areas damaged by erosion, vehicle ruts and similar damage shall be re-leveled with topsoil and replanted. Finished ground surface shall be sufficiently smooth and level to facilitate mowing.

G11.05 ACCEPTANCE

A. Work under this section shall be considered acceptable when finish graded surfaces are level and well-drained, when grass achieves full coverage and is at least 2 inches high, and when other requirements listed herein are met.

B. Acceptance of work normally coincides with final acceptance of the entire project. However, seasonal factors may be cause for delay in grass planting, development, and acceptance.

C. The Owner will accept responsibility for normal maintenance when grass is accepted. However, the Contractor shall remain responsible for any subsequent grass damage that he causes, and for warranty of materials and workmanship as required in the Special Conditions.

G11.06 MEASUREMENT AND PAYMENT

A. Grass seeding shall be measured and paid for by the square yard complete in place after provisional acceptance at the unit contract price as provided in the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G12 - SEDIMENTATION AND EROSION CONTROL

G12.01 SCOPE

A. This specification covers the requirements for installing, maintaining, removing and cleaning the areas related to sedimentation control work as shown on the Drawings and as specified herein. The work shall include, but not necessarily be limited to: installation of temporary access ways and staging areas, stone filter boxes, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, excelsior matting installation and final cleanup.

G12.02 GENERAL

A. The Contractor shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to off site areas or into the stream system via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of the Contractor. No additional charges to the Owner will be considered.

B. Sedimentation and erosion control measures shall conform to the requirements outlined in the Texas Commission on Environmental Quality, Chapter 313.

G12.03 MATERIALS

A. Crushed stone for sediment filtration devices, access ways and staging areas shall conform to Texas Department of Transportation "Standard Specifications for Construction of Highways, Streets and Bridges."

B. Berm structural stone shall be rip-rap as follows:

1. Rip-rap shall be sound, durable rock which is roughly rectangular shape and of suitable quality to insure permanence in the condition in which it is to be used. Rounded stones, boulders, sandstone or similar soft stone will not be acceptable. Material shall be free from overburden, spoil, shale, and organic material, meet the Engineer's approval and be well graded within the following limits:

Weight of Stone	Percent Finer by Weight
40 lb	100
12 lb	50
3 lb	0

C. Silt Fence

1. Steel posts shall be a minimum of 5 feet in length, 2-1/2-in by 2-1/2-in by 1/4-in angle post with self-fastening tabs and a 5-in by 4-in (nominal) steel anchor plate at bottom.

2. Welded wire fabric shall be 4-in by 4-in mesh of 12 gauge by 12 gauge steel wire.

3. Silt fence fabric shall be a woven, polypropylene, ultraviolet resistant material such as Mirafi 100X as manufactured by Mirafi, Inc., Charlotte, NC or equal.

4. Tie wires for securing silt fence fabric to wire mesh shall be light gauge metal clips (hog rings), or 1/32-in diameter soft aluminum wire.

5. Prefabricated commercial silt fence may be substituted for built-in-field fence. Pre-fabricated silt fence shall be "Envirofence" as manufactured by Mirafi Inc., Charlotte, NC or equal.

D. One quarter inch woven wire mesh shall be galvanized steel or hardware cloth.

E. Straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, or rye that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.

F. Latex acrylic copolymer, such as Soil Sealant with coalescing agent as manufactured by Soil Stabilization Co., Merced, CA or approved equivalent shall be used as straw mulch tackifier.

G. An asphalt tackifier shall only be used when temperatures are too low to allow the use of a latex acrylic copolymer and only with prior written approval from the Engineer.

H. Excelsior matting blanket shall be installed in all seeded drainage swales and ditches as shown on the Drawings or as directed by the Engineer. Excelsior matting shall be AMXCO Curlex Blanket as manufactured by American Excelsior Company, Arlington, TX or equal.

G12.04 INSTALLATION

A. Silt Fence Installation

1. Silt fences shall be positioned as indicated on the Drawings and as necessary to prevent off site movement of sediment produced by construction activities as directed by the Engineer.

2. Dig trench approximately 6-in wide and 6-in deep along proposed fence lines.

3. Drive metal-stakes, 8 feet on center (maximum) at back edge of trenches. Stakes shall be driven 2 feet (minimum) into ground.

4. Hang 4 by 4 woven wire mesh on posts, setting bottom of wire in bottom of trench. Secure wire to posts with self-fastening tabs.

5. Hang filter fabric on wire carrying to bottom of trench with about 4-in of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and secure with tie wires 12-in O.C. both ways.

6. Backfill trench with excavated material and tamp.

7. Install pre-fabricated silt fence according to manufacturer's instructions.

B. Construct filter boxes as detailed on the Drawings, from 1/4-in woven wire mesh or hardware cloth and wood. Fill with crushed stone and place over all drop inlets and manholes to storm drain system as each inlet is completed. This should be done prior to setting casting, if there is a delay between installation of inlet structures or drain manholes and setting of castings. An alternate method is to ring each inlet with a silt fence.

C. Rock Berm Installation

1. Place berm structural stone across channel just below lower sandbag wall at work area. Face upstream side of structural berm with crushed stone.

D. Staging areas and access ways shall be surfaced with a minimum depth of 4-in of crushed stone.

G12.05 MAINTENANCE AND INSPECTIONS

A. Inspections

1. Contractor shall make a visual inspection of all sedimentation control devices once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas or into the vent trench, Contractor shall promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

B. Device Maintenance

1. Silt Fences

a. Remove accumulated sediment once it builds up to one-half of the height of the fabric.

b. Replace damaged fabric, or patch with a 2-ft minimum overlap.

c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.

2. Filter Boxes: Replace crushed stone when it becomes saturated with silt.

3. Stone Filter Berm

a. Muck out trapped silt from dewatering operations when it has built up to within 6-in of the top of the berm.

b. Replace crushed stone filter when saturated with silt.

4. Add crushed stone to access ways and staging area as necessary to maintain a firm surface free of ruts and mudholes.

G12.06 TEMPORARY MULCHING

A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 days of the completion of rough grading.

B. Straw mulch shall be applied at rate of 100 lbs/1000 ft2 and tackified with latex acrylic copolymer at a rate of 1 gal/1000 ft2 diluted in a ratio of 30 parts water to 1 part latex acrylic copolymer mix.

G12.07 REMOVAL AND FINAL CLEANUP

A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Regrade all areas disturbed during this

process and stabilize against erosion with surfacing materials as indicated on the Drawings.

G12.08 MEASURMENT AND PAYMENT

A. No separate payment will be made for work performed in accordance with this section of the specifications, and the cost thereof shall be included in the appropriate items of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G13 - SITE CONDITIONS

G13.01 SUBSURFACE INFORMATION

A. No Subsurface investigations have been made by the Owner. The Contractor shall be responsible for any subsurface explorations and tests he deems necessary.

G13.02 SITE INVESTIGATION AND REPRESENTATION

A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work; the general and local conditions, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads, and uncertainties of weather, river/stream stages, or similar physical conditions at the site; the conformation and conditions of the ground; the character of equipment and facilities needed preliminary to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this Contract.

B. The Contractor further acknowledges that he has satisfied himself as to the character, quality, and quantity of surface and subsurface materials to be encountered from inspecting the site, as well as from information presented herein as a part of these Contract Documents. Any failure by the Contractor to acquaint himself with all the available information will not relieve him from responsibility for properly estimating the difficulty or cost of successfully performing the work. Neither the Owner nor the Engineer assume responsibility for any conclusion or interpretation made by the Contractor on the basis of the information made available by the Owner or the Engineer.

C. Existing ground profiles shown on the Plans were plotted from field surveys.

G13.03 RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

A. Known utilities and structures adjacent to or encountered in the work are shown on the Drawings. The locations shown are taken from existing records and the best information available from existing plans; however, it is expected that there may be some discrepancies and omissions in the locations and quantities of utilities and structures shown. Those shown are for the convenience of the Contractor only, and no responsibility is assumed by either the Owner or the Engineer for their accuracy or completeness.

B. Neither the Owner nor his officers or agents shall be responsible to the Contractor for damages as a result of the Contractor's failure to protect utilities encountered in the work.

C. The Contractor shall at all times provide unobstructed access to fire hydrants, underground conduit, manholes, and water or gas valve boxes.

D. Where the Contractor's operations could cause damage which might result in considerable expense, loss, and inconvenience when his operations are adjacent to or near railway, telegraph, telephone, television, power, oil, gas, water, sewer, irrigation, or other systems, no operations shall be commenced until the Contractor has made all arrangements necessary for the protection of these utilities and services.

E. The Contractor shall notify all utility offices that are affected by the construction operation at least 15 days in advance of commencing construction operations. The Contractor shall not expose any utility without first obtaining permission from the affected agency. Once permission has been granted, locate and, if necessary, expose and provide temporary support for all existing underground utilities in advance of operations.

F. The Contractor shall be solely and directly responsible to the Owners and operators of such utility properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage that may result from the construction operations under this Contract.

G. In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, the Contractor shall promptly notify the proper authority and cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no event shall interruption of any water or utility service be allowed unless prior approval is granted by the owner of the utility.

H. The Contractor shall replace, at his own expense, any and all other existing utilities or structures removed or damaged during construction, unless otherwise provided for in these Contract Documents.

I. Where existing utility lines or structures are so located as to physically conflict with permanent structures to be constructed under this Contract, the conflicting utility line or structure shall be permanently relocated. Such relocations shall be considered as required by this Contract.

J. The Contractor shall give immediate notice to the Engineer, the Owner and the owner of the utility (where applicable) when a physical conflict is determined to exist. The actual relocation of a public utility will be accomplished by the owner of the utility at his expense unless otherwise specified in these Contract Documents. Any delays resulting from the required relocations of the utilities are the responsibility of the Contractor.

K. Where existing utility lines or structures are so located as to interfere with the Contractor's prosecution of the work, but do not physically conflict with completed manholes or other permanent structures to be constructed under this Contract, any modification, alteration, or relocation of interfering utility,

either permanent or temporary, shall be accomplished at the expense of the Contractor.

L. The Contractor shall give immediate notice to the Engineer and the Owner of the utility when an interference is determined to exist and shall obtain approval to relocate such utility or to discontinue service therein from the Engineer and the owner of the utility. The owner of the utility shall have the right to do all work required to discontinue, relocate, and replace interfering utilities and charge the Contractor for all costs thereof. When approved by the Engineer and the owner of the utility, all work required to discontinue, relocate, and replace interfering utilities may be done by, or arranged for, by the Contractor. All such discontinuance, relocation, and replacement shall be accomplished in accordance with all requirements of the owner of the utility.

M. When notified by the Contractor that an interference or conflict has been determined to exist, the Owner and the Engineer will determine whether such interference shall be considered as required by construction or as incidental to construction.

G13.04 INTERFERING STRUCTURES

A. Take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground. An attempt has been made to show major structures on the Plans. While the information has been compiled from the best available sources, it's completeness and accuracy cannot be guaranteed, and it is presented as a guide to avoid known possible difficulties.

B. Protect existing structures from damage, whether or not they lie within the right-of-way or the limits of the easements obtained by the Owner. Where existing structures must be removed to properly carry out the work, or are damaged during the work, they shall be restored at the Contractor's own expense to at least their original condition and to the satisfaction of the Engineer.

C. The Contractor may, with the approval of the Engineer and without additional compensation, remove and replace in a condition as good as or better than original, any small interfering structures such as fences and signposts that interfere with the Contractor's operations.

G13.05 FIELD RELOCATION

A. During the progress of the work, minor relocations of the work may be necessary. Such relocations shall be made only by direction of the Engineer and the Owner. If existing structures are encountered that will prevent construction as shown, notify the Engineer before continuing with the work in order that the Engineer may make such field revisions as necessary to avoid conflict with the existing structures. If the Contractor shall fail to notify the Engineer when an existing structure is encountered and proceeds with the work despite this interference, he shall be responsible for any damage that may occur.

G13.06 LAND MONUMENTS

A. The Contractor shall preserve or replace any existing Federal, State, County, City, and private land monuments encountered. All monument replacement by the Contractor shall be performed by a land surveyor licensed in the State of Texas.

G13.07 PAYMENT

A. The work specified in this Section shall be considered incidental and payment will be included as part of the appropriate lump sum or unit prices specified in the Proposal and Bid Schedule.

END OF SECTION

SECTION G14 - TESTING FOR PRESSURE PIPELINES

G14.01 SCOPE OF WORK

A. Furnish all labor, materials, tools, equipment and related items required to perform pressure and leakage testing of pressure pipelines.

G14.02 GENERAL

A. Hydrostatic pressure and leakage tests shall be made on all pressure pipelines.

B. All labor and equipment, including test pump with regulated by-pass meters and gauges required for conducting pipeline tests, shall be furnished by the Contractor.

1. The Contractor shall make the necessary arrangements for securing and transporting all water used in testing.

2. Water for one testing, one flushing, and one filling or a volume equal to three times the volume of the pipe line shall be furnished by the Owner. If additional water is required because of breaks, leaks, etc., the Contractor shall purchase the water from the Owner at current water rates.

C. Time and sequence of testing shall be scheduled by the Contractor, subject to observation and approval by the Owner. The Contractor shall provide adequate labor, tools and equipment to operate valves and to locate and repair any leaks discovered during the initial filling of the pipeline prior to actual testing or during the course of the tests.

G14.03 CLEANING

A. At the conclusion of the work, thoroughly clean all pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered the pipes during the construction period. Debris cleaned from the lines shall be removed from the low end of the pipeline. If after this cleaning, obstructions remain, they shall be removed. If any defective pipes or joints are discovered, they shall be repaired, and/or replaced by the Contractor at his expense.

G14.04 TEST PROCEDURES FOR PRESSURE PIPELINES

A. General

1. After the pipe has been laid and backfilled and the backfill has been otherwise consolidated, all newly laid pipe, or any valved section thereof, shall be subjected to the hydrostatic pressure of 180 psi. The duration of each leakage test shall be four hours.

2. The pipe shall be filled slowly with water and all air shall be expelled. If permanent air vents are not located at all high points, the Contractor shall install corporation or blow-off cocks at such points so that air can be expelled as filling takes place. After verification that all air has been expelled, the cocks shall be closed and the pipe kept filled until tested. All exposed pipe, fittings, valves, hydrants and joints shall be examined while under test pressure and all visible leaks shall be stopped. Any cracked or defective pipe, fittings, valves or hydrants discovered during testing shall be removed and replaced by the Contractor. Replacement shall be with sound material and the test shall be repeated until satisfactory to the Owner.

B. Special Requirements

1. Where any section of pipeline is provided with concrete reaction blocking, the hydrostatic pressure shall not be made until at least 5 days have elapsed after installation of the blocking. However, if high-early-strength cement is used in the concrete, 2 days shall have elapsed prior to testing.

C. Allowable Leakage

1. Leakage during the above test shall not exceed a rate equal to 10 gallons per inch in internal pipe diameter per mile per 24 hours.

D. Disinfecting Water Mains

1. The Contractor shall disinfect all water mains before the new facilities are placed into service. Disinfection must be performed in accordance with AWWA C651, latest revision and water samples must be submitted to a laboratory approved by Texas Department of Health. Sample results must indicate the facility is free of microbiological contamination before it is placed into service. It shall be the Contractor's responsibility to obtain a current copy of AWWA C651 to determine the correct forms of chlorine for the disinfection, the basic disinfection procedure, preventative and corrective measures during construction, methods of chlorination, final flushing procedures, procedures for bacteriological tests, procedures for re-disinfection and disinfection procedures when cutting into existing mains. The Contractor, at its expense, will supply the concentrated chlorine disinfecting material; the Corporation's personnel will supervise and direct the overall

sterilization procedure. The Contractor, at his own expense, shall provide all other equipment, supplies and necessary labor to perform the sterilization under general supervision by the Owner.

E. General:

1. All valves shall be arranged to prevent the strong disinfecting dosage from flowing back into the existing water supply piping. The new pipeline shall then be completely filled with disinfecting solution by feeding the concentrated chlorine and approved water from the existing system uniformly into the new piping in such proportions that every part of the line has a minimum concentration of chlorine as prescribed in AWWA C651.

2. Unless otherwise identified, all quantities called for herein refer to measurements by the testing procedures in the current edition of "Standard Methods of Examination of Water and Wastewater". The chlorine concentration of each step in the sterilization procedure shall be verified by chlorine residual determinations. This disinfecting solution shall be retained in the piping for at least twenty four (24) hours, and all valves, hydrants, etc., shall be operated to disinfect all their parts. After this retention period, the water shall contain no less than the chlorine residual prescribed in AWWA C651 throughout the treated section of the pipeline.

3. This heavily chlorinated water shall then be carefully flushed from the line until the chlorine concentration is not higher than the residual generally prevailing in the existing distribution system, or approximately one (1) part per million. Proper planning and appropriate preparations to handle, dilute and dispose of this strong chlorine solution without causing injury or damage to the public, the water system, the environment must be approved by the Corporation before flushing of the line may begin, and the flushing shall be witnessed by an authorized representative of the Corporation.

G. Bacteriological Testing

1. After final flushing of the strong disinfecting solution, water samples from the line shall be tested for bacteriological quality, at the Contractor's expense, and must be found free of coliform organisms before the pipeline may be placed in service. One (1) test sample shall be drawn from the end of the main, and additional samples collected at intervals of not more than one thousand (1,000) feet long along the pipeline.

2. The Contractor, at his own expense, shall install sufficient sampling taps at proper locations along the pipeline. Each sampling tap shall consist of a standard corporation cock installed in the line and extended with a copper tubing gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

3. Samples for bacteriological analysis shall be collected only from suitable taps and in sterile bottles. If the initial disinfection fails to produce acceptable sample tests, the disinfection procedure shall be repeated (without extra compensation) until satisfactory test results have been obtained, before the piping may be placed in service.

G14.06 FINAL ACCEPTANCE

A. No pipe installation will be accepted until all known leaks have been repaired whether or not leakage is within allowable limits. Locating and repairing of leaks shall be performed by the Contractor at no additional cost to the Owner.

G14.07 MEASUREMENT AND PAYMENT

A. Testing for pressure pipelines, complete in place, will be paid for at the unit contract prices lump sum as provided in the Proposal and Bid Schedule.

B. Payment for the unit contract prices for the items of work performed shall be the total compensation for the furnishing all equipment, materials, tools, incidentals, labor and performing the work that is necessary for testing pressure pipelines and appurtenances in accordance with the plans and provisions of these specifications.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G15 - CHAIN LINK FENCE - GALVANIZED

G15.01 DESCRIPTION

A. Scope: This Item governs for furnishing and installing chain link fence and related labor, materials, and accessories, complete in place.

B. Work Specified Elsewhere: Other related work as called for on PLANS or specified elsewhere in this or other TECHNICAL SPECIFICATIONS.

G15.02 SUBMITTALS

Submit the following in accordance with Specification Section 01300, “Submittals”.

A. Product data for all materials used.

B. Shop drawings showing sizes, fabrication, anchorage, finishes, and other pertinent data.

G15.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver fabric, posts, gates, and accessories to job site with sufficient protection, bracing, etc. to ensure arrival in undamaged condition.

B. Store in original bundles on level supports and protect to prevent damage until erected.

C. The uniformity of the zinc coating shall be determined by visual inspection. If, in the opinion of the ENGINEER, visual examination is not conclusive, he may use the Preece Test as described in ASTM A239. When so tested, all items shall withstand a minimum of 6 one-minute dips, except for those items designated in ASTM A153 as Class B-2, B-3, C and D which shall withstand a minimum of 4 one-minute dips.

D. Careful visual inspection shall be made to determine the quality of the zinc coating. Excessive roughness, blisters, salammoniac spots, bruises and flaking if present to any considerable extent, shall provide a basis for rejection. Where practicable, all inspection and tests shall be made at the place of manufacturer prior to shipment and shall be so conducted as not to interfere unnecessarily with the progress of the work.

E. Damaged spelter coating shall be repaired by thoroughly wire brushing the damaged area and removing all loose, cracked or weld-burner spelter coating. The cleaned area shall be painted with 2 coats of zinc oxide-zinc dust paint conforming to the requirements of Federal Specification TT-P-641B. The paint shall be furnished at his expense.

G15.04 - G15.11 (NOT USED)

G15.12 MATERIALS

A. Fabric to conform to ASTM A392, height as shown on PLANS, No. 9 W&M gage wire. Unless otherwise shown on PLANS or in Special Provision to this Item, use Class 2 zinc coating. Top and bottom selvages to be twisted and barbed.

B. Barbed wire, when specified, to be mounted on extension arms and conforming to ASTM A121, No. 12-1/2 W&M gage wire, with 4-point barbs, and Class 3 zinc coating. Three lines of wire per extension arm; number of extension arms to be as shown on PLANS.

C. Line posts to be 2¼-inch rolled "H" section of high carbon steel, minimum weight 4.1 pounds per foot, conforming to ASTM A36, or 2.375-inch O.D. Schedule 40 steel pipe, minimum weight 3.65 pounds per foot, conforming to ASTM A120.

D. End, corner, and pull posts to be 2½-inch square tubular steel, minimum weight 5.79 pounds per foot, conforming to ASTM A501, or 2.875-inch O.D. Schedule 40 steel pipe, minimum weight 5.79 pounds per foot, conforming to ASTM A120.

E. Swing gate posts, shown in the following table, to be in accordance with ASTM A120 Schedule 40 for steel pipe, and ASTM A501 for steel tubing:

Pipe Size O.D.	Square Tubular	Min. Weight Per Ft.	Leaf Length
2.875″	2½″	5.79 lbs.	Up to 6′
4.0″	3″	9.11 lbs.	Over 6′ to 10′
6.625″		18.97 lbs.	Over 10′ to 16′

F. Top rails and bracing to be 1.660-inch O.D. Schedule 40 steel pipe, minimum weight 2.27 pounds per foot, conforming to ASTM A120, in random lengths averaging 20 feet, with minimum lengths of 10 feet.

G. Barbed wire extension arms to be standard 45 degree, one-piece, three wire capacity, with steel conforming to ASTM A36.

H. Swing gates to be standard heavy type, welded, watertight, rigid frame 1.90-inch O.D. Schedule 40 steel pipe, minimum weight 2.72 pounds per foot, conforming to ASTM A120, or 2-inch square tubular steel, minimum weight 2.69 pounds per foot, conforming to ASTM A501.

I. Hot-dip galvanize component metal parts of fence (except fabric and barbed wire) with minimum standard zinc coating in accordance with ASTM A153.

J. Miscellaneous:
   1. Tension Wire: 7 gauge.
   2. End Caps: Galvanized malleable iron - acorn style.
   3. End Fittings: Galvanized malleable iron.
   4. Padlocks: Furnish heavy-duty padlocks for all gates. Padlocks furnished are to be master-keyed to match OWNER's existing locks (if applicable). Furnish OWNER a minimum of five (5) sets of keys. Padlocks to have minimum 3/8″ hardened steel shank, Master Lock No. 5, or equal.

G15.13 – G15.14 (NOT USED)

G15.15 INSTALLATION

A. Install chain link fence to the lines, grades, and locations shown on PLANS.

B. Maximum post spacing, unless shown otherwise on PLANS, is not to exceed 8 feet. Set posts equal to or smaller than 2.375-inch O.D. pipe and 2¼-inch square tubular or "H" shapes, 36 inches minimum into concrete. Set larger posts and all gate posts 42 inches minimum into concrete. Set posts in Class "A" concrete with minimum of 6-inch concrete cover. Top of concrete to be 1 inch above ground and crowned to shed water. All concrete shall be reinforced with no less than three 6 inch diameter × 2 inch pitch spiraled loops of No. 4 gage wire.

C. Erect fencing to generally follow ground surface and adjust irregularities in grade. Where depressions or swales are crossed by fencing, provide galvanized pipe and wire fabric laced to main fabric to prevent entrance of small animals but permit natural drainage flow.

D. When shown on the PLANS, a continuous concrete mowing strip shall be installed. Construct mowing strip with Class "A" concrete finished to grade of surrounding ground. Reinforce with 6″ × 6″ × ¼″ WWM. Mowing strip shall not be installed between gate posts.

E. Join top rails with suitable sleeve-type couplings, making rigid connections with provisions for expansion and contraction. Pass rail through base of line post barbed wire extension arm and fasten securely to terminal post.

F. Brace all terminal posts with brace member securely fastened to terminal and first line post. Tie terminal post, near ground line, to line post at brace member with steel tension rod of 3/8-inch minimum diameter, complete with turnbuckle.

G. Provide hole in barbed wire extension arms for top rail on line posts and for connection of top rail at corner posts. Extension arm to be capable of supporting 300-pound load at end of mounted arm.

H. Securely fasten chain link fence wire fabric as follows:
   1. To terminal posts using 1/4-inch × 3/4-inch tension bars with 11-gage pressed steel bands spaced approximately 14 inches apart.
   2. To line posts with 6-gauge wire clips spaced approximately 14 inches apart.
   3. To top rail with 9-gauge tie wires spaced approximately 24 inches apart.

I. CONTRACTOR to be responsible for swing gate design, using same fabric as for fence, and in accordance with dimensions shown on PLANS. Furnish hinges, latches, stops, keepers, and other accessories. Gate to swing open 180 degrees as shown on PLANS with keepers to hold in open position. Furnish latches with provisions for padlocking. For gates less than 4-foot lengths, provide latches which automatically engage when gate swings shut.

J. This fence shall be grounded where a power line passes over the fence. In any case, a ground shall be provided at not to exceed 1,000 feet apart in straight runs of fence. Each individual section of fence shall have at least 1 ground. The ground shall consist of a copper-weld rod 8 feet long and a minimum of 5/8-inch in diameter driven or drilled in vertically until the top of the rod is approximately 6 inches below the top of the ground. A No. 6 solid copper conductor shall be approximately 6 inches below the top of the ground. A No. 6 solid copper conductor shall be brazed to the rod and to the fence in such a manner that each element of the fence is grounded.

G15.16 – G15.24 (NOT USED)

G15.25 MEASUREMENT AND PAYMENT

No separate measurement or payment for work performed under this Section. Include cost of same in Contract price bid for work of which this is a component part.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION G16 – PERSONNEL AND OVERHEAD COILING DOORS

G16.01 GENERAL

This section covers furnishing and installing metal doors and frames for personnel doors and overhead coiling doors as shown on the PLANS and as required for a complete and proper installation including related labor, materials, and accessories, complete in place. See Plan Sheet P-07 for proposed door schedule.

G16.02 SUBMITTALS

Shop drawings for all metal doors and frames showing details of door/frame types and details, design, construction details, methods of assembly, hardware locations, showing fabrication, sizes, anchorage and fastening methods, finishes and other pertinent data.

G16.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver frames, doors, materials, and accessories to job site with sufficient protection, bracing, etc. to ensure arrival in undamaged condition.

B. Careful visual inspection shall be made to determine the quality of the door's exterior zinc surfaces. Excessive roughness, blisters, salammoniac spots, bruises and flaking if present to any considerable extent, shall provide a basis for rejection. Where practicable, all inspection and tests shall be made at the place of manufacturer prior to shipment and shall be so conducted as not to interfere unnecessarily with the progress of the work.

C. Damaged spelter coating shall be repaired by thoroughly wire brushing the damaged area and removing all loose, cracked or weld-burner spelter coating. The cleaned area shall be painted with 2 coats of zinc oxide-zinc dust paint conforming to the requirements of Federal Specification TT-P-641B. The paint shall be furnished at the Contractor's expense.

PART 1 – METAL DOORS AND FRAMES

G16.04 MATERIALS

A. Metal doors and frames shall be in accordance with ANSI/SDI A250.8-2014 Specifications for Standard Steel Doors and Frames (SDI-100).

1. Doors and Frames shall be as manufactured by Hull Supply Co or approved SDI Certified Equal.
2. Doors shall be of flush construction, 1-3/4" thick, and 18 Gage (SDI Level 2 – Heavy Duty) Galvanized Steel on exterior doors.
3. All Door Edges shall be seamless, with vertical seams filled and dressed smooth.
4. Core construction shall be of Polystyrene or Polyurethane construction, with a U-Factor of 0.16 or less per ASTM C518 and 0.45 per ASTM C1363.
5. Frames shall be fully welded and fabricated from commercial quality 16 Ga. Cold Steel (SDI Level 2 or 3, match door). Frames in new openings in existing drywall may be knocked down with prior approval.
6. Provide galvanized steel top caps for all exterior doors.
7. Provide jamb and floor clops appropriate for wall system.

B. Where specified or indicated on the plans, provided labeled fire door and frame assemblies, including smoke control and steel astragals where required, in accordance with the latest ANSI/UL and ANSI/NFPA requirements.

G16.05 INSTALLATION

A. Install doors and frames plumb, level, and rigidly secure in place per ANSI/SDI A250.11-2012. Adjust after installation if required to assure proper operation.

B. Installation of hardware shall be in accordance with the hardware Manufacturer's Recommendations, current TAS Requirements, and ANSI/SDI A250.6, Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.

C. Doors and Frames shall be cleaned, phosphatized and finished with one coat of baked on rust-inhibiting prime paint in accordance with ANSI A250.11.

D. All Door and Frame Tolerances shall be in accordance with SDI-117, Manufacturing Tolerances For Standard Steel Doors and Frames.

PART 2 – OVERHEAD COILING DOORS

G16.06 MATERIALS

A. Manufacturer shall have a minimum of five (5) years of experience in the design, manufacture, and installation of each type of door required. Doors, tracks, and accessories shall be provided by a single manufacturer.

B. All overhead coiling doors provided under this section shall be insulated doors and warranted to be satisfactory as to design, workmanship and materials for a period of two (2) years, Beginning at the date of substantial completion of the project.

1. All repairs for warranted defects shall be made by the manufacturer at no cost to the Owner. The Warranty need not include damage from abnormal use, intentional damage, or accidental damage beyond the manufacturer's control.

2. Powderguard Max finishes applied to guides and headplates shall be warranted for a period of not less than five (5) years from the date of substantial completion.

C. All coiling overhead doors shall be as manufactured by Overhead Door Company, Lewisville, Texas or approved equal.

D. Size and dimensions of doors shall be as shown on PLANS.

E. All doors shall be designed to withstand wind/suction loads of 20 psf without damage to the door or assembly components.

F. **Insulated Doors** shall be overhead coiling, upward-acting, insulated, advanced performance commercial doors equal to overhead door Stormtite AP Model 627 Series.

1. Curtain shall be 22 Gauge Interlocking Roll-formed Stainless-Steel sheets, Flat Crown profile Type Fit-265.

2. Back slat shall be fabricated of 22 Gauge stainless steel.

3. Slat Cavity shall be filled with CFC-Free foamed-in-place Polyurethane insulation. (R-Value: 10.9, U-Value: 0.09)

   i. U-Factor shall be 0.94 (NFRC Test Report) with maximum U-Factor no higher than 1.00.

   ii. Air infiltration shall meet ASHRAE 90.1 and IECC 2012 C402.2.3 Air Leakage requirements of <1.00 cfm/sf.

4. Hood shall be 24 Gauge Stainless-Steel with intermediate supports as required.

5. Weatherseals:

   i. Bottom weatherseal and internal hood seal shall be vinyl bulb type.

   ii. Interior and exterior EPDM triple-seal finned guide weatherseal.

iii. Lintel weatherseal.

iv. Air infiltration package, including guide cover, guide cap, PVC weatherseal on exterior of guide, lintel weatherseal and vinyl bottom seal.

6. Bottom Bar shall be two (2) stainless angles (minimum 1/8" thick) bolted back-to-back.

7. Guides shall be roll-formed galvanized steel shapes attached to continuous galvanized steel wall angle.

8. Brackets shall be Type 316 Stainless-Steel to support counterbalance and curtain.

9. Counterbalance shall be a Helical Torsion spring type housed in a steel tube or pipe barrel and supporting the curtain with deflection limited to 0.03 inch per foot of span. Spring tension shall be adjustable.

10. Operation shall be Chain Hoist operation.

11. Locks shall be padlockable chain keeper lock with interior slide bolt locks.

G16.07 FINISH

A. Slat finish shall be Type 316 stainless steel, No. 4 Satin finish.

B. Guide finish shall be Powderguard Max powder coat, color as selected by Owner form Manufacturer's standard powder coat selection.

G16.08 INSTALLATION

A. Doors shall be mounted to face of Stainless-Steel jambs.

B. Installer shall be a Company specializing in performing work of this section, with a minimum of three (3) years' experience and approved by the Manufacturer. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

C. Contractor shall field verify all areas and conditions under which the work of this section will be performed and correct all conditions detrimental to proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

PART 3 – FINISH HARDWARE

G16.09 MATERIALS

A. Materials:

1. Where used in a corrosive environment, all hardware including internal mechanisms shall be corrosion resistant. All steel components shall be heavy gauge Type 316 Stainless Steel.

2. All exterior door hardware shall be Grade 1. All interior door hardware shall be Grade 2 or better.

3. Hinges shall be as manufactured by Hager, Stanley, McKinney, or Approved Equal.

4. Locks and latches shall be as manufactured by Sargent, Yale, Corbin Russwin, or approved equal.

5. Push-Pull and Door Stops shall be as manufactured by Trimco, Brookline, Baldwin or approved equal.

6. Thresholds, weatherstripping, door bottoms, and light seals shall be as manufactured by A.J. May, National Guard Products, Reese Weatherstripping Company, or Zero Weatherstripping Company.

B. Key Locks as Directed by OWNER.

1. Where existing systems are in place, key to match.

2. All keying shall be factory keyed.

3. Establish Master key system for building as directed.

G16.10 FINISH

A. Stainless Steel hardware shall be US32D Satin Stainless Steel (BHMA 630).

G16.11 INSTALLATION

A. All hardware shall be supplied and installed to meet current Accessibility requirements of the ADA and Texas Accessibility Standards (TAS).

B. Where required, provide door hardware rated for use in assemblies complying with NFPA 80, listed and labeled by a qualified testing agency for the required fire protection and smoke control ratings.

C. Install all hardware in accordance with manufacturer's recommendations. Verify proper operation upon completion of installation and make adjustments as necessary.

D. Examine all areas and conditions where work of this section will be installed and correct conditions which would be detrimental to proper installation and operation.

G16.12 PAYMENT

No separate payment shall be made for work in accordance with this section of the specifications, and the cost shall be included in the Lump Sum amount of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

MECHANICAL

TECHNICAL SPECIFICATIONS

SECTION M01 – HORIZONTAL SPLIT CASE PUMPS AND MOTORS

M01.01 GENERAL

A. Furnish six (6) horizontal single stage, double suction, double volute, axially split pumping units, complete with motors, baseplates, couplings and guards, as shown on the Contract Drawings and as specified herein.

M01.02 SUBMITTALS

A. Submit shop drawings and product data in accordance with Division 1. Submittals shall include the following:

1. Certified dimensional drawings of each item of equipment and auxiliary apparatus to be furnished, including equipment weights and location and size of anchor bolts.

2. Literature and drawings describing the equipment, including parts list and materials of construction, in sufficient detail to indicate full conformance with the detail specifications.

3. Motor performance data, wiring diagrams, one-lines and conduit entry dimensions and details. Other submittals as required by Division 16.

4. Cut sheets on accessory items.

5. Manufacturer's certified rating curves, to satisfy the specified design conditions, showing pump characteristics of discharge, head, brake horsepower, efficiency and guaranteed net positive suction head required (NPSHR). When applicable, variable speed curves shall be provided showing at least three speeds plotted equally from maximum rpm to minimum rpm. Minimum rpm shall be no less than that required to obtain minimum flow. Curves shall show the full recommended range of performance and include shut-off head. This information shall be prepared specifically for the pump proposed. Catalog sheets showing a family of curves will not be acceptable.

B. Operation and Maintenance Data

1. Complete operating and maintenance instructions shall be furnished for all equipment specified in this Section as provided in Division 1. The maintenance instructions shall include troubleshooting data and full preventative maintenance schedules and complete spare parts lists with ordering information.

2. Include certified performance data and curves from factory tests.

M01.03 REFERENCE STANDARDS

A. Design, manufacturing, and assembly of elements of the equipment herein specified shall be in accordance with, but not limited to, published standards of the following, as applicable:

1. American National Standards Institute (ANSI)

2. American Society for Testing and Materials (ASTM)

3. American Bearing Manufacturers Association (ABMA)

4. Hydraulic Institute Standards (current edition)

5. National Electrical Manufacturers Association (NEMA)

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

M01.04 QUALITY ASSURANCE

A. To assure unity of responsibility, the motors, couplings, guards and supporting base shall be furnished by the pump manufacturer. All pumping units specified herein shall be furnished by a single manufacturer.

B. The equipment specified herein is intended to be of proven ability as manufactured by concerns having extensive experience in the production of such equipment. The equipment furnished shall be designed, constructed and installed to operate satisfactorily when installed as shown on the Drawings. Pumps shall be manufactured in accordance with the Hydraulic Institute Standards, except where otherwise specified herein.

C. Pumps designed for services other than water service, and only adapted for this use, shall only be acceptable provided they include each and every feature specified herein. Manufacturer shall modify his standard equipment as necessary to provide the materials and features specified herein.

D. The pump manufacturer shall be fully responsible for the design, arrangement and operation of all connected rotating components as assembled and mounted on a fabricated steel base to ensure that neither harmful nor damaging vibrations occur at any speed within the specified operating range.

E. Vibration, when measured in the direction of maximum amplitude on the pump and motor bearing housings, shall not exceed limits given in the latest ANSI/HI nomograph for the applicable pump type.

M01.05 DELIVERY, STORAGE AND HANDLING

A. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the unit and equipment are ready for operation.

B. All equipment and parts must be properly protected against any damage during shipment. The Contractor shall store equipment in accordance with the manufacturer's instruction.

M01.06 MAINTENANCE

A. Furnish all special tools and test equipment required for the proper servicing of all equipment.

M01.07 EQUIPMENT WARRANTY

A. Equipment warranty shall be manufacturers standard, extended to 12 months from startup, not to exceed 18 months from shipment. Manufacturer’s warranty shall not relieve the Contractor from furnishing a complete system warranty as specified in the General Conditions.

M01.08 GENERAL

A. The pumping units shall all be supplied by one manufacturer and shall be complete including pumps, motors, baseplates, couplings, guards and other accessories as specified herein..

B. The pumps, motors, drives, couplings and base plates shall be designed and built for 24-hour continuous service at any and all points within the specified range of operation, without overheating, without damaging cavitation, and without excessive vibration or noise.

C. Each major piece of equipment shall be furnished with a stainless steel nameplate securely mounted to the body of the equipment. As a minimum, the nameplate for the pumps shall include the manufacturer's name and model number, serial number, rated flow capacity, head and speed. As a minimum, nameplates for motors shall include the manufacturer's name and model number, serial number, horsepower, speed, input voltage, amps, number of cycles, power and service factors.

M01.09 CONDITIONS OF OPERATION

A. The pumps shall be Flowserve Model 8LR-20A or engineer pre-approved equal (must be approved 14 days prior to bid). The pumps within each service type shall be identical in every respect with all parts interchangeable.

B. Each pump shall be designed for the conditions of service tabulated as follows

PUMPING UNIT DESIGN REQUIREMENTS	
Item	SERVICE X
Number of Units to be Supplied	6
Maximum Full Load Motor Speed (rpm)	1800
Maximum Motor horsepower (Hp)	200
Minimum Suction Size (inches)	12”
Minimum Discharge Size(inches)	8”
Minimum Shut-Off Head at Design Speed (feet)	255’
Design Point Capacity (gpm)	2500
Minimum TDH at Design Point (feet)	200
Minimum Efficiency at Design Point (%)	75
Maximum Allowable NPSHR at Design Duty Point (feet)	10
Flowserve Pump Model Used for Design	8LR-20A

C. Where total head (TDH or TH) is referred to in conjunction with the specific discharge requirements, it shall be understood to consist of the sum of the pressure head plus the velocity head, in feet, at the discharge nozzle of the pump minus the pressure head and the velocity head at the suction nozzle of the pump. The efficiency of the pump shall be understood to be based upon total head as just defined.

M01.10 PUMP CONSTRUCTION

A. The casing shall be of close-grained cast iron equivalent to ASTM A-48 or ductile iron ASTM A536 and hydro tested to 1.5 times the casing working pressure. Casing shall be split on the horizontal center line with suction nozzles, discharge nozzles and feet cast integrally with the lower half. The casing halves shall be accurately located with straight dowel pins to eliminate mismatch. The upper half of the casing shall be removable without disturbing pipe connections or pump alignment. Single volute casings are acceptable if they are manufacturers standard for given sizes. The casing shall be supplied with all necessary vents, drains and gage connections.

B. The impeller shall be made of 316SST and be enclosed double suction type. The impeller shall be machined and polished to perform with maximum efficiency. Each impeller shall be dynamically balanced to ISO-1940; Grade 6.3 to minimize vibration and improve bearing life. The impellers shall be keyed to the shaft and secured at the hub between the shaft sleeves extending through the stuffing box with shaft nuts external to the stuffing box.

C. Furnish 316 SST wear rings. The casing ring shall be designed to provide a smooth water flow onto the impeller eye. The impeller ring shall be locked with a positive means to prevent rotation.

D. The pump bearings shall be heavy duty, single row anti-friction type arranged for oil or grease lubrication. Sealed for life bearings are not acceptable. The bearings shall be adequately sized for long life without the addition of external cooling. Inboard and outboard bearing interchangeability is preferred. Removable bearing housings shall be supplied with 360 degrees mounting via a register fit, or 180 degrees mounting, bolted and doweled to the pump bearing brackets cast integral with the lower half casing.

E. The pump shaft shall be heat-treated carbon steel, accurately machined and ground over its entire length. On packed pumps, the shaft shall be protected from wear and erosion by removable sleeves secured at opposite ends with shaft sleeve nuts or retaining rings. The shaft shall have the same nominal diameter from one shaft sleeve locknut to the other to minimize fatigue failures due to stress concentrations. Maximum shaft deflection at the stuffing box face shall not exceed .002" at 25% of BEP.

F. Sleeves shall be bronze, key driven, and sealed with an O-Ring to prevent leakage between shaft sleeve and pump shaft. Sleeves shall extend through the stuffing box.

G. The stuffing box may be cast separate and sealed with O-Rings at the casing, or cast solid with the upper and lower casing halves. A separate cast stuffing box design shall employ 360 degrees mounted bearing housings, with a full register fit. The stuffing box shall be suitable for use with either packing or mechanical seals. Each box shall accommodate five full rings plus the lantern ring. For this project pumps shall be furnished with packing and lantern rings.

H. Suction and discharge nozzles shall be 180 degrees apart and shall have the same centerline axis. Integral pump nozzle sizes shall be minimum 8” discharge & 12” suction and shall be supplied with ANSI class flanges of 125/150# or 250/300# rating as made necessary by the service. Minimum nozzle sizes shall not be attained by addition of standard ACIP reducing/increasing fittings.

M01.11 PUMP MOTORS

A. Each pump shall be driven by a horizontal variable speed squirrel cage induction electric motor with a maximum horsepower and speed as specified under Subsection M01.09.B. The pump motors shall be suitable for driving the pumps continuously over the entire pumping range. The pump motors shall be furnished by the pump manufacturer.

B. Each pump shall be directly connected to its driver by means of a Falk; Fast's or equal all metal coupling, suitably sized to transmit the required driving torque and to accommodate unavoidable shaft misalignment.

C. Motors shall have ODP/TEFC enclosures with a 1.15 service factor for sine wave and shall be 1.0 for non-sinusoidal wave form over the entire speed. Motors shall be 460 volt, 3 phase, 60 hertz. Motors shall be US, Baldor, TECO/Westinghouse or approved equal.

D. The motor shall be non-overloaded at any point in the design operating range of the pump, including run-out and shut-off. The total capacity of the motor (name plate rating), shall not be exceeded while the pump is operating at any point on the characteristic curve. The service factor shall not be used as part of the motor rating.

E. Motors shall be suitable for Full voltage starting.

F. Motors shall have Class F insulation with Class F temperature rise.

G. Motors shall not exceed sound levels of 3 dBA higher than NEMA MG 1.

H. Motors balance and vibration control shall be in accordance with NEMA MG 1, Part 7.

I. Measure the vibration amplitude (filtered and unfiltered) at the top of the motor in five planes (ODE$_{X, Y, \& Z}$, DE$_{XY}$). Unfiltered amplitudes must be within the Hydraulic Institute Standards limit, measured in in/sec RMS at any one of these five points.

M01.12 BASEPLATES

A. The pump and motor shall be mounted on an extended fabricated steel baseplate of sufficient size and rigidity to support the unit and prevent harmful vibration. The steel base shall be anchored to the level surface of a concrete pad with suitably sized Type 316 stainless steel anchor bolts.

B. Pump manufacturer shall factory mount and rough align motors on baseplates. Final alignment shall be done by Contractor in the field. Motors may be dismounted for shipment.

M01.13 SHOP TESTS

A. The Engineer shall have the right to witness the factory tests and inspect any equipment to be furnished under this Section prior to their shipment from place of manufacture.

1. Each pump shall be given a non-witness performance test. A complete test report for each pump, including certified characteristic curves of the pump, consisting of at least all information required in Paragraph 1.03 above, except for NPSHR, and certified copies of the hydrostatic test report, shall be submitted to and approved by the Engineer before the pumps are shipped.

B. Each pump specified herein shall be factory tested in accordance with the latest edition of the Hydraulic Institute Standards. Notification of such test and a list of test equipment and procedures shall be furnished to the Engineer at least 10 working days before the schedule test date.

1. Each pump shall be tested and data recorded at its operating conditions of service as listed in Paragraph 1.09 above. Sufficient test point readings shall be made to establish complete head flow capacity, efficiency and brake horsepower curves for each pump.

2. If the application is variable speed a minimum speed curve shall be plotted on the performance curve basis the affinity laws and the test data.

3. All gauges and other test instruments shall be calibrated within 30 days of the scheduled test and certified calibration data shall be provided. All Venturi flow meters shall be calibrated as required by ANSI/HI standards.

M01.14 SURFACE PREPARATION AND SHOP PRIME PAINTING

A. Each fabricated steel base mounted pumping unit, including base and guard, shall be shop painted in accordance with manufacturers standard paint procedure.

B. Motors shall have manufacturers standard finish paint for corrosive environments.

M01.15 BASEPLATES (RECOMMENDED)

Large pumping units (≥ 200 hp) to be mounted on a machined, 1/2-inch thick form bent baseplate. The base rigidity shall prevent more than 0.010-inch parallel coupling misalignment and 0.005 in/in angular misalignment when subjected to maximum motor and pump loads simultaneously.

A. Fabrication

1. The base shall be fabricated from A-36 steel or better materials. The base shall be constructed as a form bent channel. This form bent base shall have a minimum thickness of 1/2 inches. Both ends on the form bent base shall be capped with material equal in thickness to the rest of the base. The motor and pump pads shall be integral to the base and machined to ensure flat and parallel surfaces. The entire base shall be commercial heated stress relieved prior to machining. The mounting pads shall be machined to minimum 0.005 inches flatness and parallel to each other within 0.010 inches. The guard may be expanded metal with maximum openings of 1/2 inch. It shall be fabricated and installed to ensure no access to the rotating shafts and coupling. The guard must be removable for maintenance purposes. The base shall be provided with a drip rim completely around the perimeter on the base plate. The rim must have a minimum width and depth of 1-1/2 inches. A minimum 1-inch NPT coupling shall be provided as a drain connection. Stainless steel drain piping shall be provided by the contractor. Anchor bolt holes may not penetrate the drip rim.

2. A minimum of four (4) anchor bolts. Anchor bolts must extend a minimum of 10 bolt diameters into concrete foundation. Anchor bolts will be provided by the contractor.

3. The base plate shall be provided with 4" minimum diameter grout holes to allow grout to be installed in the field by the contractor. The pumps and motor shall be fastened to the baseplate using Grade 5 or better plated bolting.

B. Coating:

Base plate and guard to be grit blasted to SSPC-SP10 Near White. Pump to be solvent wiped prior to painting. The base, and guard shall be coated as follows: Form bent base and guard to be given 1 coat of Tnemec N69 primer. The pump shall be coated as follows: Pump to be coated in manufacturer's standard paint.

C. Pre-Installation:

The pump and motor shafts shall be aligned in the factory prior to shipping using a laser alignment device or instrument. A minimum of 0.125 inches of shim pack thickness shall be provided under all drivers. The pump shall not be shimmed. After the factory alignment, the pump shall be pinned or blocked to prevent the pump from moving on the mounting pads. This allows the pump to be removed and reinstalled in the same position. The pump and motor may be removed to verify the base leveled during the installation process.

D. Grouting:

Grout holes, at least 4 inches in diameter, or at least 3.5-inch squares must be provided and located to allow complete grouting of the base. The holes shall be spaced such that grout is not required to be forced more than 30 inches. Vent holes, a minimum of 0.5 inches in diameter shall be provided at the end of all grout runs. The motor and pump may be removed to fill the base with grout. The base must be installed with a minimum of 1 inch of grout between the base and the concrete surface. This grout is used to support and level the baseplate. The grout shall have a minimum compressive strength of 6000 psi after 28 days. The grout shall cure at least 7 days prior to pump start-up and running.

E. Installation & Start-up:

The contractor shall ensure that the pump discharge and suction flange are not supporting the weight of the piping or valves. The motor and pump may be removed for grouting purposes. After grouting is complete and prior to start-up, the motor and pump shall be aligned with a laser device. Prior to installing the coupling, the motor rotation must be verified. The pump manufacturer's rep must be present during the start-up.

M01.16 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work performed in accordance with this section of the specifications, and the cost thereof shall be paid for under the proper item of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION M02–TRAVELING BRIDGE CRANE AND HOIST

M02.01 GENERAL

A. This work required under this section shall include the manufacturing, shipping, installing and field testing of a top running traveling bridge crane with one electric chain trolley hoist.

B. One class of on-site training of the owner's operators and maintenance technicians will be provided by the manufacturer. This will include but not necessarily be limited to: techniques of safe hoist operation, frequent and periodic inspections, minor troubleshooting. Meeting the requirements of ANSI B30.2 and OSHA §1910.179

M02.02 REFERENCES

A. *Crane Manufactures Association of America (CMAA)*

1. Specification No. 74 for Top Running & Under Running Single Girder Electric Overhead Traveling Cranes.

B. *American National Standards (ANSI)*

1. ANSI B-30.16 Overhead Hoists

C. *Occupational Safety and Health Administration (OSHA)*

1. 29 CFR §1910.179 Overhead & Gantry Cranes

D. *Hoist Manufacturing Institute (HMI)*

E. *National Electric Code (NEC)*

1. NEC (Latest Edition Article 610 Cranes and Hoists)

F. *American Institute of Steel Construction (AISC)*

1. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings

G. *American Welding Society (AWS)*

1. D1.1- Structural Welding Codes – Steel
2. D14.1 – Overhead Cranes

M02.03 OPERATING SPECIFICATIONS

Capacity:	2 tons
Required lift:	12 feet
Duty Class:	CMAA Class C (Standard Duty)
Span:	52’ – 2”
Runway Length:	54’ – 3 1/4,,
Bridge Girder Deflection:	L/600
End Trucks:	Tube type top running single girder end trucks. Girder connections. Dual motor drive with Variable Frequency Drive controls. Helical gear motors shall include AC magnetic disk brakes per CMAA requirements. Wheel base to span shall not exceed 8:1
Hoist:	Low headroom electric chain hoist to maximize hook travel.
Hoist rated capacity	2 tons (4,000 lbs.)
Duty cycle	ASME H4
Limit Switches	Upper and Lower limit switches
Chain:	12’ available lift Grade 80 Load Chain single chain fall with fabric chain container.
Trolley:	Single speed control trolley. Motor driven with two drive wheels per CMAA requirements.
Enclosures:	Bridge Control - NEMA 4/12 Hoist – IP55 Pendant – IP65

Speeds:	Bridge	100	fpm	VFD
	Hoist	14	fpm	Single
	Trolley	40	fpm	Single

Voltage: Primary 460v 3 ph 60 Hz, 120v 1 ph 60Hz control

M02.04 MANUFACTURERS

Bridge Crane and Hoist shall be as manufactured by Global Crane & Service or Coffing Crane or approved equal.

M02.05 RUNWAY ELECTRIFICATION

A. The runway conductors shall be Conductix or Wampfler SAF-T-BAR Series C rolled galvanized steel bar. The minimum capacity of the conductor bar shall be 110 amps or larger to carry the necessary ampere load without undue heating. Or equivalent.

B. Four bar conductor configuration to meet current NEC shall be supplied with all brackets; bar hangers; splice covers; power feeds; expansion gaps assemblies and collectors as required by Wampfler, or equivalent.

C. When Variable Frequency Drives are provided, tandem collector shoes shall be provided.

M02.06 RUNWAY BEAMS AND RAILS

A. Runway beams shall be design to meet requirements of CMAA.

B. Runway rail shall be 30# ASCE secured by weld on No. 114 Rail Clips.

M02.07 BRIDGE CRANE

A. Crane Girders

1. Girders shall be designed to resist vertical, horizontal and tensional forces Per CMAA Requirements.

B. End Trucks

1. End trucks shall be constructed for structural steel tubing, providing a rigid structure. Design shall allow easy wheel removal and exchange.

2. End trucks shall be fitted with shock absorbing bumpers

3. Crane wheels shall be high strength ductile iron, machined with double flanges and straight treads, hardened and sized to meet the minimum allowable wheel load per CMAA.

C. Electrification

1. To supply electrical power across the crane for bridge; trolley and hoist motions; a flat cable festoon system shall be utilized. The flat cable shall be extra flexible with color coded wires per NEMA standards.

D. Controls

The bridge, trolley and hoist controls shall be mounted in a NEMA 4/12 enclosures.

1. A magnetic mainline contactor, controlled by momentary on/off switch on the pendant station shall be included.

2. A Radio control/pendant selector switch shall be included. Radio shall be Entering Flex 8EX2.

3. Horn will be provided per CMAA.

4. Radio control will be Primary. Pendant will be Secondary.

E. Pendant station

1. To supply electrical power and control signals across the crane for bridge; trolley and hoist motions; a flat cable festoon system shall be utilized. The flat cable shall be extra flexible with color coded wires per NEMA standards.

2. To supply electrical power and control signals from the festoon to the pendant a round cable with strain relief shall be utilized. The round cable shall be extra flexible with color coded wires per NEMA standards.

3. A UL listed A600-Q600 double insulated control pendant will be supplied.

4. The pendant shall offer electroshock protection conforming to IEC 536 Class II.

5. The pendant enclosure shall meet NEMA 4 and IP65 for watertight, dust tight, sleet resistant indoor and outdoor operation.

6. The pendant enclosures shall have durable, clearly marked legends plates, guards to protect switches from damage or accidental actuation and shall allow for right or left hand operation.

M02.08 PAINTING

A. All structural steel shall be cleaned from rust and mill scale.

B. Bridge crane shall be painted safety yellow.

C. Hoists shall be painted per the Hoist manufactures standard coating.

D. Runway beams and structural components shall be painted red oxide or per the owners required color selection.

M02.09 ACCEPTANCE TESTING

A. Conduct testing for final acceptance after the erection work has advanced to the point that inspection and testing can proceed without interruption.

B. Allow inspection of all parts of the crane containing electrical parts or moving mechanical components by the owner, engineer.

C. Test cranes for capacity, speed, and deflections, in the present of the owner, engineer if so requested, with 125 percent of the hoist marked capacity load on the hook.

D. Crane supplier will transmit to the owner a certificate of load test and compliance with OSHA requirements.

E. Crane supplier will supply two (2) sets of Operation and Maintenance manuals for the crane and hoist.

M02.10 PAYMENT

A. No separate payment will be made for work performed in accordance with this section of the specifications, and the cost there of shall be included in the lump sum amount of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION M03 – FLOW METERS

M03.01 SCOPE OF WORK

A. This section describes the requirements for two (2) electromagnetic flow meters in the station Discharge Lines as shown on sheets P-12 and P-13 of the Plans.

B. Under this item, the contractor shall furnish and install the flow meter equipment and accessories as indicated on the plans and as herein specified.

M03.02 SUBMITTALS

A. The following information shall be included in the submittal for this section:

1. Data sheets and catalog literature for the magmeter and the microprocessor-based signal converter.

2. Connection diagrams for equipment wiring.

3. List of spare parts and optional equipment.

M03.03 ELECTROMAGNETIC FLOW METER

A. The electromagnetic flow meter shall consist of a flow sensor based on Faraday's Law of Electromagnetic Induction and microprocessor-based signal converter.

B. Sensor:

1. Operating principle: Utilizing Faraday's Law of Electromagnetic Induction, the flow of liquid through the sensor induces an electrical voltage that is proportional to the velocity of the flow.

2. Construction: The sensor flow tube shall be 304 stainless steel surrounded by two coils. Liner material shall be hard rubber (Ebonite). Measurement and grounding electrodes shall be Hastelloy C-276. Connecting flanges shall be carbon steel

3. Installation: A minimum of 5 pipe diameters up stream and 3 pipe diameters down stream are recommended (Consult the factory for any variations.).

4. Operating Temp: -4 to +158° F.

5. Size: 1" to 78" diameter (see instrument schedule)

6. Submergence: The sensor shall be pedestal sealed against accidental submersion to 3 feet for 30 minutes standard (NEMA 4X), or permanently submerged to 30 feet when the terminal box is backfilled with a non-setting, transparent potting material (NEMA 6P).

C. Signal Converter:

1. Type MAG 6000 with NEMA 4X enclosure.

2. Display: Background illumination with alphanumeric 3-1ine, 20-character display to indicate flow rate, totalized values, settings, and faults. The display shall be capable of rotating 360 degrees and shall be protected by a hinged cover.

3. Power supply: 115/230 VAC or 11-24VDC.

4. Operating temperature: -4 to +140 degrees F.

5. Outputs: 0-20 mA or 4-20 mA into 800 ohms max. One relay rated at 42 VAC/2 A, 24 DC/1 A. Digital (frequency or pulse) for external display of flow rate or totalizer. The transmitter shall be furnished with digital communications capabilities if required. Digital communications shall be accomplished via an optional plug in communications module.

D. Sensor and signal converter performance:

1. Flow Range: 0.3 m/s (0.98 ft/s) to 12m/s (39 ft/s)

2. Accuracy: Mag 6000: ±0.2% ±1mm/s; Mag 5000: ±0.4% ±1mm/s

3. Bi-directional flow capabilities shall be standard

E. Totalizer:

1. Two eight-digit counters for forward, net, or reverse flow.

F. The electromagnetic flow meters shall be Rosemount 8707 Flanged with fully welded sensors, or approved equal. Meters shall be furnished with Rosemount Series 8732 transmitters or approved equal. Insertion type flow meters will not be accepted.

G. Spare Parts: Spare parts for the equipment shall include the following, unless otherwise noted:

1. One set of manufacturer’s recommended spare parts.

2. Extra operation manuals as required.

H. The following Signal Converter functions shall be provided:

1. All programming shall be accomplished through an integral keypad and all programming shall be protected by a user defined password.

2. The signal converter shall be integrally mounted or remotely mounted using a remote-mount kit provided by the manufacturer.

3. The signal converter shall provide a 0/4-20 mA DC signal proportional to flow rate into 800 ohms max. Output shall be selectable as unidirectional or bi-directional.

4. The relay shall be programmable as error indicator, limit alarm or pulsed output.

5. The signal converter system shall be equipped with an error and status log with 4 groups of information.

   a. Information without a functional error involved.
   b. Warnings which may cause malfunction in the application.
   c. Permanent errors, which may cause malfunction in the application.
   d. Fatal error, which is essential for the operation of the flowmeter.

6. A system error shall be indicated by a flashing icon on the display or activation of the relay when set as an error alarm.

7. The first nine standing errors shall be stored in the error pending log. A corrected error is removed from the error pending log. A status log shall be provided to store the last 9 error messages received for 180 days regardless of correction.

I. Verification Procedure:

1. Verification using a stand-alone Siemens MAGFLO Verificator to measure a number of selected parameters in the flow sensor and signal converter, which affects the integrity of the flow measurement, shall be available through a factory authorized verification service.

2. Verification of the Flowmeter shall consist of the following test routines;

   a. Insulation test of the entire flowmeter system and cables
   b. Test of sensor magnetic properties
   c. Signal converter gain, linearity, and zero point tests
   d. Digital output test
   e. Analog output test

3. A NIST traceable certificate of verification shall be issued for flowmeters passing all of the tests stating the flowmeter transmitter is within 2% of the original factory test parameters.

M03.04 INSTALLATION

A. Contractor shall install meters in accordance with manufacturer's recommendation for the minimum upstream and downstream installation requirements for the flow sensor.

B. Wiring between flow sensors and remote mounted signal converters shall use cable type and procedures as per the manufacturer's recommendations.

M03.05 PAYMENT

A. No separate payment will be made for work performed in accordance with this section of the specifications, and the cost there of shall be included in the lump sum amount of the Proposal and Bid Schedule.

END OF SECTION

TECHNICAL SPECIFICATIONS

APPENDIX A

A1 – Geotechnical Investigation Report

LANGERMAN FOSTER
ENGINEERING COMPANY

GEOTECHNICAL REPORT

Avenue G Pump Station

Temple, Texas

LFE Project No. W21-052

Report Prepared For:

KPA Engineers
Temple, Texas

Report Prepared By:

Scott M. Langerman, P.E.
Principal / Geotechnical Engineer

STATE OF TEXAS
SCOTT MILES LANGERMAN
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LICENSED
PROFESSIONAL ENGINEER

August 9, 2021

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ENGINEERING COMPANY

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GEOTECHNICAL REPORT
AVENUE G PUMP STATION
TEMPLE, TEXAS

1.0 INTRODUCTION

Purpose: The purpose of this geotechnical investigation is to provide geotechnical design and construction criteria for reconstruction of a portion of an existing building. Geotechnical data and recommendations are provided in a brief, and hopefully user-friendly manner.

Authorization: Services were performed in general accordance with LFE Proposal No. GEO21-034, dated March 16, 2021. Authorization to proceed was provided on July 7, 2021 by Mr. Rick Kasberg, P.E.

2.0 SUBSURFACE EXPLORATION

Drilling Date: July 15, 2021

Boring Layout: A single boring was marked at the site by LFE personnel with the assistance of Mr. Rick Kasberg, P.E. Plates 1 and 2 in the Appendix show the approximate boring location.

If precise location and elevation data are desired, then a registered professional land surveyor should be retained to locate the boring and determine the ground surface elevation.

Sampling Methods: A split spoon was used for sampling in the top 10 feet in conjunction with standard penetration tests. N-values were recorded during drilling and are listed on the boring log. Weathered limestone was cored from a depth of 10 to 20 feet using an NX-size (2 inch) cutting bit. Water was used to cool the cutting bit while coring.

3.0 LABORATORY TESTS

Test Procedures: The following tests were conducted in general conformance with the standards noted in Table 3.1.

TABLE 3.1: LABORATORY TESTS

Test Name	*Test Method*
Atterberg Limits	ASTM D 4318
-#200 Mesh Sieve	ASTM D 1140
Moisture Content	ASTM D 2216
Soil Classification	ASTM D 2487
Unconfined Compression (rock)	ASTM D 7012

Test Results: Laboratory test results are shown on Plate 3 in the Appendix, and selected test results on the boring logs.

4.0 SUBSURFACE MATERIALS AND SITE OBSERVATIONS

Stratigraphy: Major strata types for the boring are listed in Table 4.1, and a boring log is contained in the Appendix. Material descriptions are general and range of depths approximate because boundaries between different strata are seldom clear and abrupt in the field.

TABLE 4.1: MAJOR STRATA TYPES

Strata	*Depth to Top of Strata (ft)*	*Depth to Base of Strata (ft)*	*General Description*
I	0	1	2.5" Asphalt over 8.5" Crushed Limestone Base
II	1	10	LEAN CLAY; brown to tan
III	10	20	WEATHERED LIMESTONE; tan, fractured, with marly clay layers

Strata changes are approximate, and in-situ transitions are usually gradual.

Geology: Based on the available geologic map[1] of the area, and the contents of the borings, the site is located within the Austin Chalk Formation.

The Austin Chalk is considered a relatively soft limestone based on universal rock classification systems but is considered relatively hard rock in the Central Texas area. Although the Austin Chalk is usually described as limestone, it is comprised of chalk, limestone, and marl (marl is calcareous clay).

The general stratigraphy above the weathered limestone consisted of lean clay with occasional broken limestone layers below a depth of 7 feet. These are residual forms form by in-situ weathering of the parent limestone.

Groundwater: The boring was drilled to a depth of 10 feet prior to using water to core weathered limestone. Weathered limestone was cored using water to cool the cutting bit and discharge cuttings. Groundwater was not observed prior to using water in the coring process.

Groundwater is common in this area, and may be present during construction. The water tends to percolate down through the surficial soils until encountering a relatively impervious layer, and then either flow down gradient or become trapped. Water also flows through fractures in weathered limestone.

The water observations conducted for this investigation are short-term and should not be interpreted as a groundwater study. However, the presence of groundwater will affect construction and long-term performance of the proposed foundation.

5.0 GEOTECHNICAL FOUNDATION RECOMMENDATIONS

Project Summary: The project consists of an existing building that will be partially demolished, and then replaced with a new addition that will house six new pumps with an option for another future pump. The existing foundation type is unknown.

Pump pits will extend about 5 to 6 feet below the top elevation of the slab (see Figure 5.1). An existing CMU block wall will remain, and steel columns will be installed to support the frame of the new addition.

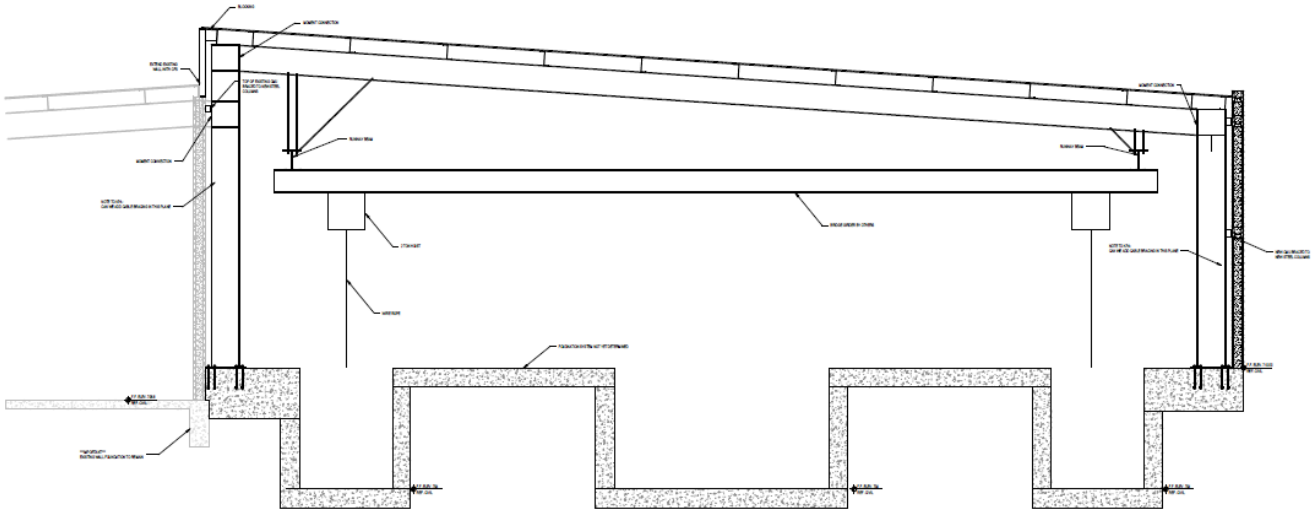


Figure 5.1: Building Section Sketch from Dudley Dunham (Strictly Preliminary)

Expansive Soil: Clay soils in the Central Texas area are subject to expansive soil movements, which include swelling under moist conditions and shrinking under dry conditions. Moisture fluctuations occur due to seasonal wet and dry cycles, but are also influenced after construction by site grading, drainage, landscaping, and groundwater. Actual soil movement is difficult to determine due to the many unpredictable variables involved.

TxDOT uses the Potential Vertical Rise (PVR) procedure to estimate soil movements. For purposes of this project, the results of the laboratory tests, engineering judgment, and experience have also been considered. ***The approximate PVR for typical ground supported slabs will be about 1 inch, which is considered low for the Central Texas area.***

Actual soil movements will depend on the subsurface moisture fluctuations over the life of the structure. Soil movements may be less than those calculated if moisture variations are minimized after construction. However, significantly larger soil movements than estimated could occur due to inadequate site grading, poor drainage, ponding of rainfall, and/or leaking utilities.

Foundation Types: Based on the types of soils encountered in the boring, as well as the anticipated construction challenges, we recommend using drilled piers to support the column loads. The floor slab may be supported on grade provided that a portion of the existing expansive clay soils are removed and then replaced with either select fill.

DRILLED PIERS WITH A SLAB ON GRADE

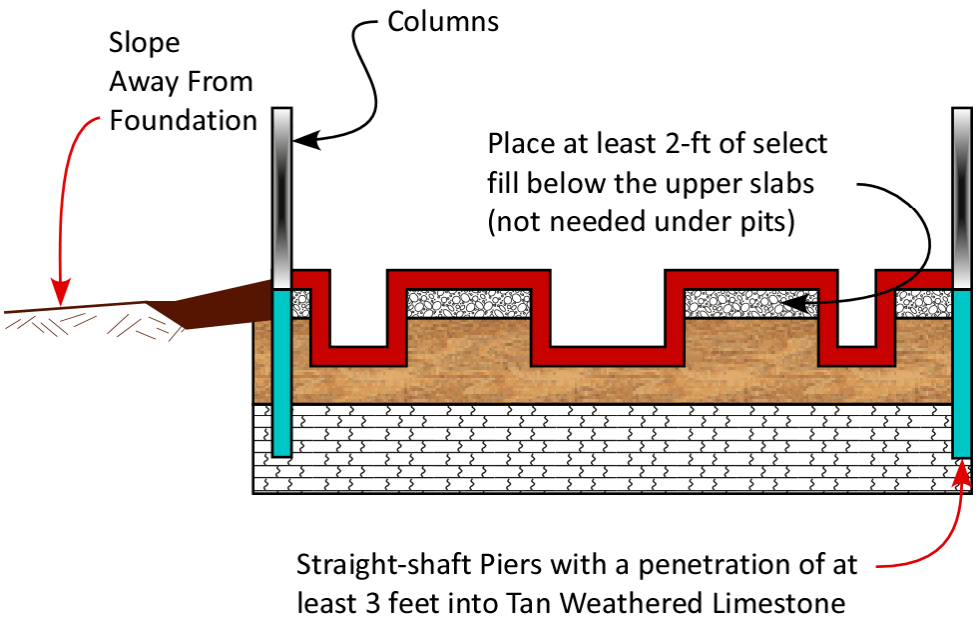


Figure 5.2: Sketch of Drilled Piers with a Slab on Grade (not to scale)

Risk: A properly designed and constructed foundation system consisting of drilled piers with a slab on grade, in conjunction with select fill, will offer a low risk of future foundation movements.

Elements outside of the building such as flatwork, drainage features, plazas, and utilities will experience adverse movements as a result of shrinking and swelling of the expansive clay soils, which may result in cracking and differential movements.

The contractor is solely responsible for temporary support of the existing CMU block wall during construction.

Straight-shaft Piers: Straight-shaft piers founded in Stratum III Tan WEATHERED LIMESTONE may be sized for an allowable end-bearing capacity of 25,000 pounds per square foot with a penetration of at least 3 feet into the bearing stratum. The piers should be specified to terminate on a hard layer, and not a softer marly clay layer.

An allowable side friction capacity of 2,500 psf (either tensile or compressive) may be used after an initial penetration of 2 feet into tan weathered limestone.

Transient Loads: The allowable end-bearing and side friction values may be increased by 30% for transient loads. However, that increase may not be combined with reduced ASD load combinations.

Uplift: Uplift forces will act on the piers as the clay soils surrounding the pier shaft swell. The following equation can be used to estimate the uplift force: $U_P = 25(d)$, where d is the pier diameter in feet, and U_P is expressed in kips. Steel in the piers must be designed to resist uplift forces using the uplift equation, but at least ½ percent steel should be used in the piers.

Pier Spacing: The ***side friction*** for piers spaced horizontally less than 3 diameters (center to center) should be multiplied by a reduction factor of 50%. Piers with horizontal spacing of 3 diameters or more are not subject to a side friction capacity reduction factor. End-bearing is not affected by pier spacing provided that the bases are at roughly the same elevation.

Settlement: Properly designed and constructed drilled shafts are expected to have a settlement of ½ inch or less.

Casing: Groundwater was not encountered during our field exploration, but may be present at the time of construction. Temporary steel casing may be necessary to seal out groundwater and prevent caving of the piers. We recommend that the contractor verify the drilling and groundwater conditions prior to commencing drilled shaft installation. Any adjustments to the pier depths must be made by LFE.

Interior Slab: Pits for the pipes will extend about 5 to 6 feet below the top of the slab. We recommend that at least 2 feet of select fill be placed below the "upper" part of the slab. Below the pits, select fill is not needed. The resultant PVR will be about ¾ inch for the upper slabs and less than ½ inch below the base of the pits.

Select fill must extend a minimum horizontal distance of 2 feet beyond the building perimeter, where practical. Carton forms below the grade beams are not necessary. Specifications for select fill are provided in Section 6.

We generally expect that the weight of the pipes will be relatively minor; however, an allowable bearing pressure of 1,500 psf can be used for the interior slabs.

Subsurface Walls (Pits)

Subsurface Walls: Subsurface walls must accommodate at-rest earth pressures. We anticipate that subsurface drainage will not be possible from a practical standpoint. However, design information for both drained and undrained conditions are provided.

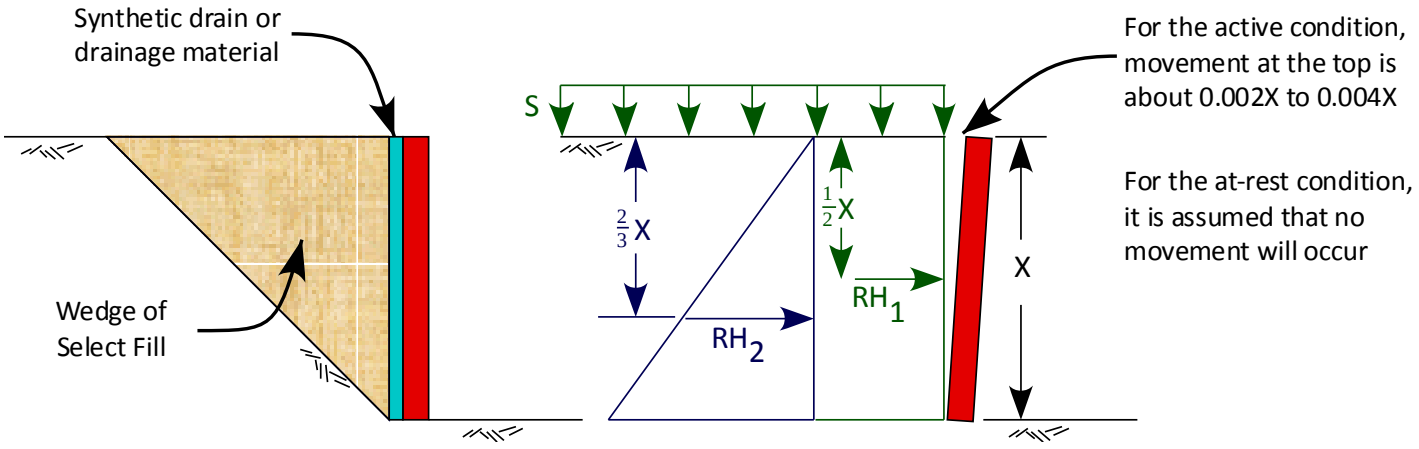


Figure 5.3: Sketch of Earth Pressures for Below-Grade Walls

TABLE 5.1: EARTH PRESSURE PARAMETERS

Earth Pressure	Coefficient	Equivalent Fluid Pressure (pcf)	Surcharge Pressure, P_1 (psf)	Earth Pressure, P_2 (psf)
At-Rest (K_0)	0.50	60	(0.50)S	60X
Active (K_A)	0.33	40	(0.33)S	40X
Passive (K_P)	3.0	360	--	--

- Values assume a 1H:1V wedge of select fill behind the wall with a unit weight of 120 pcf.
- ***Values assume that the wall is drained. Hydrostatic pressures must be added for an undrained condition***
- Earth pressure parameters do not include a factor of safety
- Drainage material: ASTM C-33, Size 57 or 67 gravel aggregate, uniformly compacted
- Base sliding resistance: 500 psf (or an ultimate coefficient of friction of 0.3)
- Resultant Horizontal Forces per linear foot:
  - $R_{H1} = (P_1)(X)$, where R_{H1} is acting at ½X from the top of the wall
  - $R_{H2} = (0.5)(P_2)(X)$, where R_{H2} is acting at ⅔X from the top of the wall

MISCELLANEOUS DESIGN ITEMS:

Flatwork:

This site is on moderately expansive clay soils. Be aware that concrete flatwork such as sidewalks, drainage features, plazas, and utilities will be subject to adverse soil movements. The owner should be prepared to repair and even replace these items over time, depending on the magnitude of movement that actually occurs. Where the ground is intentionally sloped and graded to provide positive drainage, the ground may swell and shrink (or settle) sufficiently over time to reverse the intended drainage, and must be remediated when necessary.

The magnitude of shrink/swell movements can be reduced by placing select fill below items such as sidewalks and approaches to entrances. From a practical standpoint, about 1 or 2 feet of select fill will help reduce the effects of the expansive clay soils, but movements on the order of 1 inch will still be possible. Cracks in ground-supported flatwork should be anticipated.

Connection to the Existing Structure:

The new addition will be directly connected to the existing building, and care must be exercised in all excavations to avoid undermining the existing foundations. Sheeting or shoring of excavations may be needed and must be evaluated by an engineer specializing in excavation stability.

The new addition should be structurally isolated, to the extent practical, from the existing structure to avoid cracking at the interface. We expect that differential movements will occur between the new/old slabs because the existing foundation has likely settled over time. The use of drilled piers for the new slab addition will help reduce future movements between the new/old. However, differential movements cannot be completely eliminated.

The contractor must include the proximity to adjacent features when planning their method of excavation and support. These features include, but are not limited to, adjacent structures and utility lines. The contractor must also be prepared to manage varying amounts of subsurface water. Dewatering quantities will depend on drainage features, any groundwater, and rainfall prior to and during construction.

It is critical that excavations near the existing foundation do not cave and create voids. Figures 5.4 and 5.5 show two usual methods of excavating for select fill placement. When the wedge method is used, special care must be taken during rain events to avoid erosion of the wedge. It is desirable to place the select fill promptly after the excavation is complete.

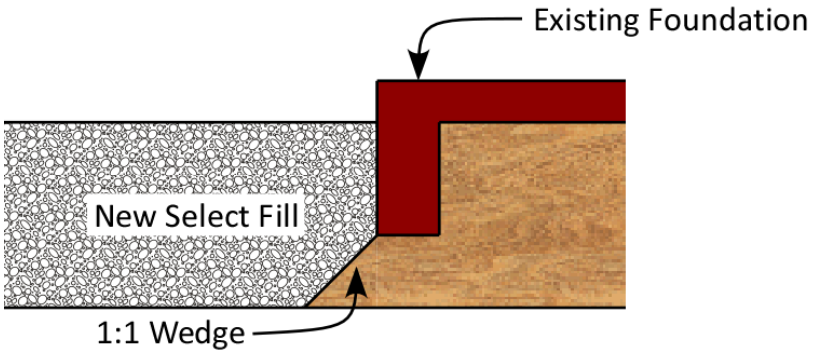


Figure 5.4: Create a 1:1 Wedge

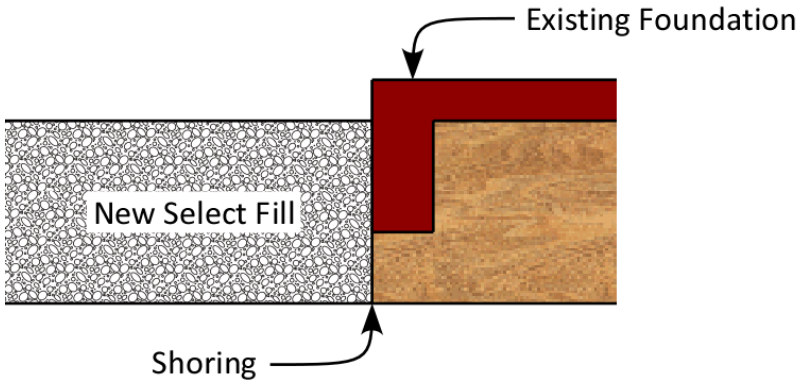


Figure 5.5: Install Shoring (designed by competent professional)

Seismic: For structural designs based upon the 2012 IBC, the following criteria will apply. The Site Class is B. The Mapped Spectral Response Acceleration at short periods (SS) is about 0.10g, and the Mapped Spectral Response Acceleration at a 1 second period (S1) is about 0.04g. Site Coefficients are as follows: Fa= 1.0 and Fv= 1.0.

Hazards associated with soil liquefaction, surface rupture, and lateral spreading are not considered an issue with this site due to the study area being in a seismically inactive area and the site being underlain at a shallow depth by bedrock.

Vapor Barriers: The need for vapor barriers, and where to place them, must be determined by the architect or structural engineer based on the proposed floor treatment, building function, concrete properties, placement techniques, code requirements, and the construction schedule. When moisture barriers are used, precautions should be taken during the initial floor slab concrete curing period to reduce differential curing and possible curling of the slabs.

Impervious Seal: We recommend that an impervious seal consisting of at least 12 inches of clay soil be constructed on top of the backfill material around the building perimeter. The intent of this impervious seal is to reduce surface runoff water from infiltrating the backfill. The seal must be sloped away from the foundation. In addition, a "plug" of clay soil must be placed at the exit points of the utilities from the foundation to reduce water intrusion into utility trenches.

Utility Connections: Utilities resting on or within expansive soils are subject to soil movements. Utility connections should account for movement potential, such as using flexible connections.

Based on our previous experience, clay soils are corrosive to buried metals. Corrosion protection should be provided for such metals. If granular backfill materials are used for the utility lines, then a clay plug must be placed at the exterior foundation penetrations to avoid water intrusion and collection within the utility trenches.

Review by MEP: We recommend that this report be provided to the project Mechanical, Electrical, and Plumbing engineers (MEP's). Their designs should account for the estimated soil movement potential. We are available to help with questions they may have about soil movements.

6.0 GEOTECHNICAL CONSTRUCTION RECOMMENDATIONS

Site Preparation: Surficial vegetation, root systems, existing foundations, existing fill materials, existing utilities, and underground structures must be removed below the building pad. The stripping depth must be based on field observations with attention given to old drainage areas, uneven topography, and wet soils. If practical, proof-rolling should be used to detect soft spots or pumping subgrade areas. Proof-rolling should be performed using a heavy pneumatic tired roller, loaded dump truck, or similar piece of equipment weighing at least 25 tons.

Subgrade Improvement: Some of the onsite soils may be subject to pumping of the subgrade, and we should be contacted if this situation occurs. Clean crushed stone may be placed at the base of the excavations to create a firm working surface where needed and/or specified. We expect that a layer of about 6 to 10 inches in thickness will be needed if soft and/or wet subgrade conditions are present, but field conditions may dictate an increased thickness. If more than about 10 inches is needed, then a filter fabric may be needed to avoid migration of fines.

The crushed stone must be clean and should generally range in size from 3 to 6 inches. Compaction specifications do not apply; however, the stone should be placed in such a manner that will stabilize the bottom of the excavations. This type of clean stone is normally used to stabilize construction entrances and should be readily available.

Be aware that plumbing and other features that require trenching will be difficult to install if the trenches extend into the clean stone.

Grading: Grading, landscaping, and drainage pose a significant risk factor for future performance of the foundation systems. Prevention of water ponding around the foundation is critical. We suggest the following general guidelines for perimeter drainage:

1. The building pads or the finished floor elevations must be elevated from the exterior finished grade to assist in draining the surface water away from the structures.

2. Where possible, extend paved surfaces up to the building lines to serve as a barrier to soil moisture evaporation and infiltration. These surfaces must slope away from the buildings.

3. Outlets for gutter systems must rapidly discharge water away from the foundations.

4. Roots from trees and decorative vegetation remove moisture from soils, which causes soil shrinkage (settlement). Trees should have root blockers near the foundation or be located as far away from the foundation as practical.

5. Sprinkler systems must be properly maintained and over-watering of the soils should be avoided.

Subgrade: Where practical, the subgrade soils should be scarified and compacted to at least 95 percent of ASTM D698 (or TEX-113-E) maximum dry density at +2 to +5% of the optimum moisture content. A maximum compacted lift thickness of six inches must be specified, with each lift tested for compliance prior to the addition of subsequent lifts.

The placement and compaction of fill material must be observed, monitored, and tested by LFE on a full-time basis. Proof-rolling may be used in lieu of compaction testing of the subgrade, but will require approval by LFE on a case-by-case basis. In most cases, compaction testing will be required.

Select Fill: Imported Select Fill should meet the requirements of 2014 TxDOT Item 247, Type A, Grade 3 or better. The select fill material should be compacted to at least 95 percent of ASTM D698 (or TEX-113-E) maximum dry density at 0 to +3% of the optimum moisture content. *Crusher fines are not acceptable.*

A maximum compacted lift thickness of six inches must be specified, with each lift tested for compliance prior to the addition of subsequent lifts. The placement and compaction of fill material must be observed, monitored, and tested by LFE on a full-time basis.

Foundation: Foundation and drilled shaft construction recommendations are listed below.

1. A minimum pier shaft diameter of 24 inches is normally specified to allow for cleaning, minimum construction tolerances, and conventional concrete mix designs. Smaller diameters may be used at the discretion of the structural engineer.

2. The foundation construction must be observed by LFE to determine that the proper bearing material has been reached in accordance with the recommendations given herein.

3. Prior to the placement of concrete, water must be removed from the foundation excavations. Prolonged exposure or inundation of the bearing surface with water may result in changes in bearing strength and compressibility characteristics. If delays occur, drilled shaft excavations should be deepened and cleaned, in order to provide a fresh bearing surface.

4. Concrete must be placed promptly after the excavations are completed, cleaned, and observed. Drilled piers must be concreted before the end of the work day.

5. The reinforcement steel cage placed in the shaft must be designed from the standpoint of meeting at least two requirements: (1) the structural requirements for the imposed loads; and (2) stability requirements during the placement of concrete.

6. Groundwater was not encountered during our field exploration, but may be present during construction. Temporary steel casing may be required to seal out groundwater and/or prevent the pier holes from caving. Special concrete design and construction procedures as described in ACI 336.1 and ACI 336.3R should be specified in order to properly extract the casing during concrete placement. The pier concrete should be placed at a minimum slump of 6 inches when temporary steel casing is used. We advise that the bid schedule include installation of temporary casing as a separate unit-price bid item.

7.0 DESIGN REVIEW AND LIMITATIONS

Design Review: The recommendations contained in this report were based on preliminary site plans and design information provided by the Client. Our recommendations may not be applicable if changes have been made to the original information that formed the basis for this report, and we must be retained to make a determination if changes have been made. We also must be given the opportunity to review construction documents to affirm that our recommendations have been interpreted correctly. We cannot be responsible for misinterpretations if not given the opportunity to review aspects of the project that are based on the contents of this report. Such a review is considered an additional service.

Limitations: This report has been prepared for the exclusive use of our client and their designated project design team. Preparation of the report has been performed using that degree of care and skill ordinarily exercised under similar conditions by reputable geotechnical engineers practicing in the same locality. No warranties, express or implied, are intended or made.

As stated in the attachment "Important Information about Your Geotechnical Engineering Report", the subsurface conditions are interpreted from samples taken only at the boring locations. During construction, variations will be encountered, and will require interpretation by LFE to verify the adequacy of the geotechnical recommendations. Other concerns and limitations are discussed in the attachment.

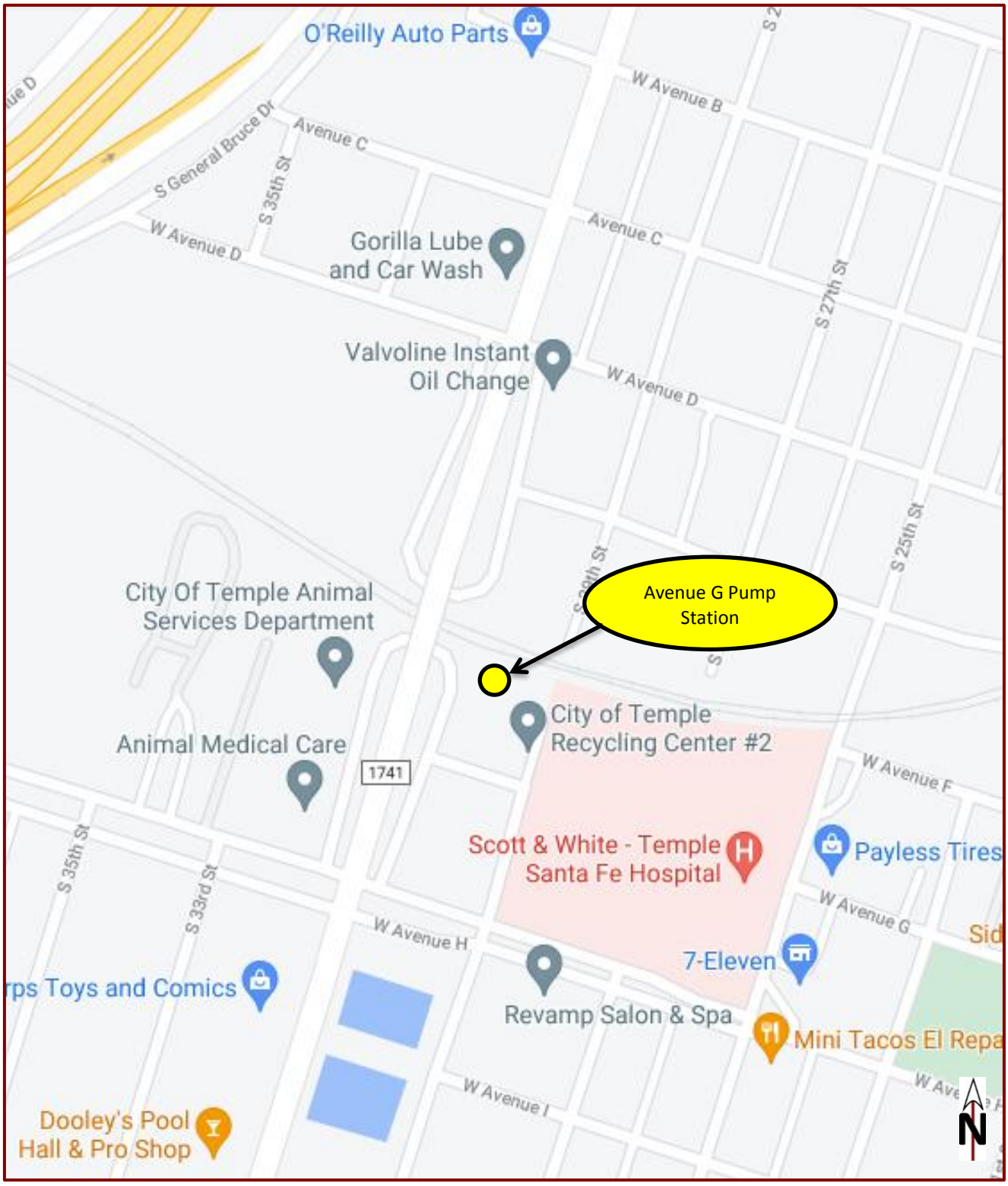
This investigation did not include environmental testing or evaluations, and does not address whether landfilling operations, as defined by the State of Texas, have occurred on the property. An environmental professional should be retained to address environmental issues.

8.0 REFERENCES:

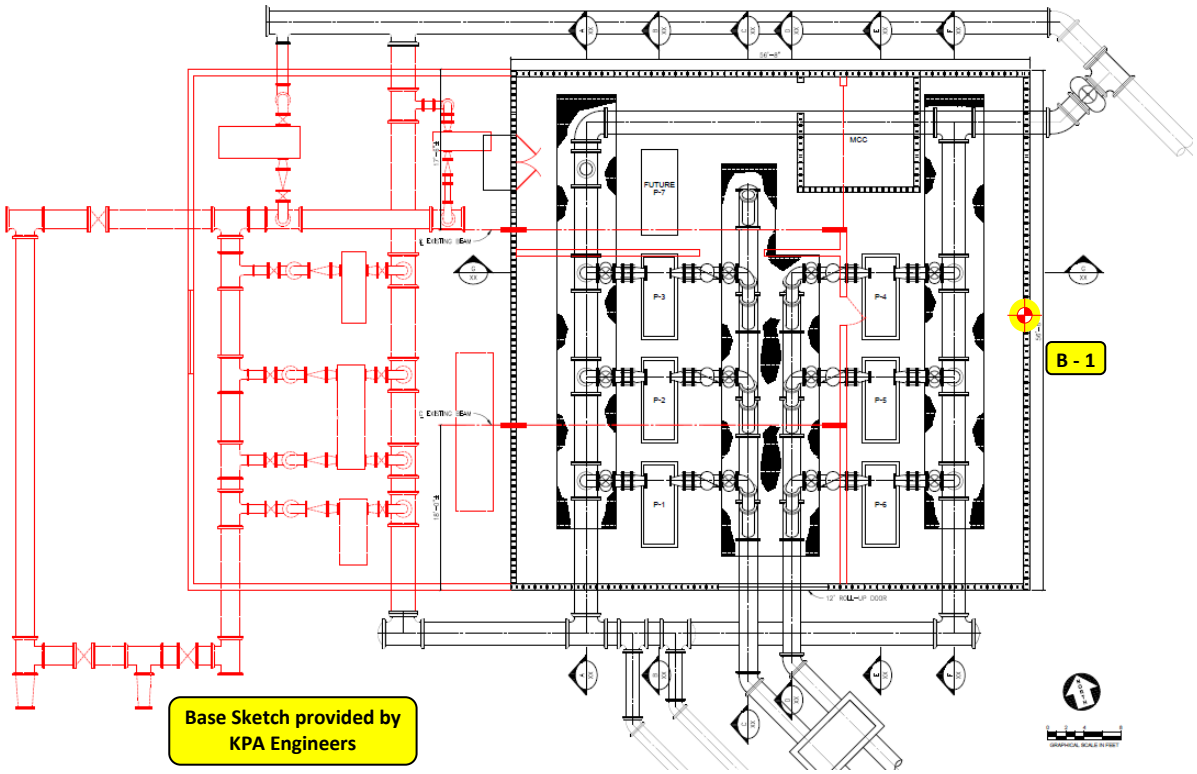
1. Geologic Atlas of Texas, Waco Sheet, Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas 1970.

APPENDIX

Site Location Map
Boring Location Sketch
Laboratory Test Results
Boring Logs
Important Information about Your Geotechnical Engineering Report



LANGERMAN FOSTER ENGINEERING COMPANY	**SITE LOCATION MAP** AVENUE G PUMP STATION IMPROVEMENTS TEMPLE, TEXAS LFE PROJECT NO. W21-052	**PLATE** **1**



LANGERMAN FOSTER ENGINEERING COMPANY

BORING LOCATION SKETCH

AVENUE G PUMP STATION IMPROVEMENTS
TEMPLE, TEXAS
LFE PROJECT NO. W21-052

PLATE

2

Boring No.	Sample Depth (ft.)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Moisture Content (%)	Unit Dry Weight (pcf)	Unconfined Compressive Strength (tsf)	Strain at Failure (%)
B-1	0.0 - 1.0				21	6			
B-1	1.0 - 2.5	49	19	30	87	24			
B-1	2.5 - 4.0				85	19			
B-1	4.0 - 5.5	34	16	18	79	13			
B-1	6.0 - 7.4				79	17			
B-1	8.5 - 9.8				86	27			
B-1	11.5 -							56.4	2.2
B-1	13.5 -							20.7	1.2
B-1	16.5 -							58.6	1.3
B-1	18.0 -							15.1	1.5

LANGERMAN FOSTER ENGINEERING COMPANY

Summary of Laboratory Results

Project: Avenue G Pump Station Improvements

Project Number: W21-052

Langerman Foster Engineering Company
Waco and Harker Heights (Killeen), Texas
Ph: 254-235-1048 www.LFECTX.com

BORING NO. B-1

CLIENT KPA Engineers **PROJECT NAME** Avenue G Pump Station Improvements

PROJECT NUMBER W21-052 **PROJECT LOCATION** Temple, TX

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	STRAIN AT FAILURE (%)
0		Approximate Surface Elevation feet												
		2.5" Asphalt over 8.5" Crushed Limestone Base	A							21	6			
		LEAN CLAY; brown, trace sand	SS		3-5-7 (12)		49	19	30	87	24			
		LEAN CLAY; brown, with sand	SS		4-3-3 (6)					85	19			
		LEAN CLAY; tan, with limestone fragments	SS		10-47-35 (82)		34	16	18	79	13			
5			A											
			SS		7-27-50/5"					79	17			
		--- occasional broken limestone layers below 7 feet	A											
			SS		6-6-50/4"					86	27			
10			A											
		WEATHERED LIMESTONE; tan, fractured, with marly clay layers	RC	94 (40)									56.4	2.2
													20.7	1.2
15			RC	84 (40)									58.6	1.3
													15.1	1.5
20														

Completion Depth: 20 ft.
Date Started: 7/15/21
Completed: 7/15/21
Logged by: J.Morrison

Remarks: Boring was advanced to a depth of 10 feet before using water in the rock core drilling process. Groundwater was not observed above that depth.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

A2 – BNSF Railroad Temporary Occupancy Permit

Jones Lang LaSalle Americas, Inc.
4200 Buckingham Rd., Suite 110
Fort Worth, TX 76155

April 22, 2022

City of Temple
Attention: Mr. James Billeck, PE
3210 E. Avenue H
Building A, Suite 107
Temple, TX 76501

Tracking #22W-13244

Dear Mr. Billeck,

Enclosed please find one (1) fully executed agreement for this permit for your files. A copy of the executed Agreement must be available upon request at the job sites allowing authorization to do the work. Please contact local BNSF Roadmaster at 254-771-4676 or by e-mail (below) in advance of entry for each location and **BEFORE YOU DIG, CALL 1-800-533-2891**. **PLEASE BE ADVISED WHEN CALLING THE DIG # PROVIDED, THAT YOU MUST SELECT OPTIONS 7 AND REQUEST TO CONNECT WITH THE SIGNAL OPERATION CENTER.**

Licensee must ensure that each of its employees, contractors, agents or invitees entering upon the premises completes the safety orientation program at the website www.BNSFcontractor.com prior to entering upon the premises. The certification is good for one year, and each person entering the premises must possess the card certifying completion.
If you need additional information, please contact me at (817) 230-2645.

Sincerely,

Kelly Schronk

Kelly Schronk
Permit Manager

Enclosure

Jacob Cook – BNSF Roadmaster – Jacob.Cook@bnsf.com

TEMPORARY OCCUPANCY PERMIT

THIS TEMPORARY OCCUPANCY PERMIT ("**License**"), is made to be effective April 22, 2022 (the "**Effective Date**") by and between **BNSF RAILWAY COMPANY**, a Delaware corporation ("**Licensor**") and **CITY OF TEMPLE**, a Texas municipality ("**Licensee**").

In consideration of the mutual covenants contained herein, the parties agree to the following:

GENERAL

1. Grant of License. Licensor hereby grants Licensee a non-exclusive license, subject to all rights, interests, and estates of third parties, including, without limitation, any leases, use rights, easements, liens, or other encumbrances, and upon the terms and conditions set forth below, to temporarily occupy, in strict accordance with the drawings and specifications approved by Licensor as part of Licensee's application process (the "**Drawings and Specifications**"), for the purposes specified in **Section 4** below, Licensor's rail corridor at or near Temple, County of Bell, State of Texas, Line Segment 7508, Mile Post 219.14 as shown on the attached Drawing No. 84096, dated March 4, 2022, attached hereto as **Exhibit "A"**, and incorporated herein by reference (the "**Premises**").

2. Term. This License shall commence on the Effective Date and shall continue for a period of four (4) months, subject to prior termination as hereinafter described.

3. Existing Improvements. Licensee shall not disturb any improvements of Licensor or Licensor's existing lessees, licensees, easement beneficiaries or lien holders, if any, or interfere with the use of such improvements.

4. Use. Licensee shall use Premises exclusively as a site for construction workspace for a concrete wall being built outside BNSF ROW. Licensee shall not use the Premises for any other purpose.

5. Alterations. Except as set forth in this License, Licensee may not make any alterations to the Premises or permanently affix anything to the Premises or any buildings or other structures adjacent to the Premises without Licensor's prior written consent.

COMPENSATION

6. License Fee. Licensee shall pay Licensor, prior to the Effective Date, the sum of one thousand three hundred fifty and No/100 Dollars ($1,350.00) as compensation for the use of the Premises.

7. Costs and Expenses.

   7.1 For the purpose of this License, "cost" or "costs" and "expense" or "expenses" includes, but is not limited to, actual labor and material costs including all assignable additives, and material and supply costs at current value where used.

   7.2 Licensee agrees to reimburse Licensor (pursuant to the terms of **Section 8** below) for all costs and expenses incurred by Licensor in connection with Licensee's use of the Premises, including but not limited to the furnishing of Licensor's flaggers and any vehicle rental costs incurred. Licensee shall bear the cost of flagger services and other safety measures provided by Licensor, when deemed necessary by Licensor's representative. Flagging costs shall include, but not be limited to, the following: pay for at least an eight (8) hour basic day with time and one-half or double time for overtime, rest days and holidays (as applicable); vacation allowance; paid holidays (as applicable); railway and unemployment insurance; public liability and property damage insurance; health and welfare benefits; transportation; meals; lodging and supervision. Negotiations for railway labor or collective bargaining agreements and rate changes authorized by appropriate Federal authorities may increase flagging rates. Flagging

rates in effect at the time of performance by the flaggers will be used to calculate the flagging costs pursuant to this **Section 7**.

8. Payment Terms. All invoices are due thirty (30) days after the date of invoice. If Licensee fails to pay any monies due to Licensor within thirty (30) days after the invoice date, then Licensee shall pay interest on such unpaid sum from the due date until paid at an annual rate equal to the lesser of (i) the prime rate last published in *The Wall Street Journal* in the preceding December plus two and one-half percent (2½%), or (ii) the maximum rate permitted by law.

LICENSOR'S RESERVED RIGHTS

9. Reserved Rights of Use. Licensor excepts and reserves the right, to be exercised by Licensor and any other parties who may obtain written permission or authority from Licensor:

9.1 to maintain, use, operate, repair, replace, modify and relocate any utility, power or communication pipe/lines/cables and appurtenances and other facilities or structures of like character upon, over, under or across the Premises existing as of the Effective Date;

9.2 to construct, maintain, renew, use, operate, change, modify and relocate any tracks or additional facilities, structures and related appurtenances upon, over, under or across the Premises; or

9.3 to use the Premises in any manner as Licensor in its sole discretion deems appropriate, provided Licensor uses all commercially reasonable efforts to avoid material interference with the use of the Premises by Licensee for the purpose specified in **Section 4** above.

LICENSEE'S OPERATIONS

10. Use of the Premises.

10.1 Licensee shall notify Licensor's Roadmaster, Jacob Cook at Jacob.Cook@bnsf.com, telephone 254-771-4676, at least ten (10) business days prior to entering the Premises. In the event of emergency, Licensee shall notify Licensor of Licensee's entry onto the Premises at the telephone number above as soon as practicable and shall promptly thereafter follow up with written notice of such entry.

10.2 Licensee's on-site supervisors shall retain/maintain a fully executed copy of this License at all times while on the Premises.

10.3 While on the Premises, Licensee shall use only public roadways to cross from one side of Licensor's tracks to the other.

10.4 Any contractors or subcontractors performing work on the Premises, or entering the Premises on behalf of Licensee shall be deemed servants and agents of Licensee for purposes of this License.

10.5 Under no conditions shall Licensee be permitted to conduct any tests, investigations or any other activity using mechanized equipment and/or machinery, or place or store any mechanized equipment, tools or other materials, within twenty-five (25) feet of the centerline of any railroad track on the Premises unless Licensee has obtained prior written approval from Licensor. Licensee shall, at its sole cost and expense, perform all activities on and about the Premises in such a manner as not at any time endanger or interfere with (i) the existence or use of present or future tracks, roadbeds or property of Licensor, (ii) the safe operation and activities of Licensor or existing third parties, or (iii) the rights or interests of third parties. If ordered to cease using the Premises at any time by Licensor's personnel due to any hazardous condition, Licensee shall immediately do so. Notwithstanding the foregoing right

of Licensor, the parties agree that Licensor has no duty or obligation to monitor Licensee's use of the Premises to determine the safe nature thereof, it being solely Licensee's responsibility to ensure that Licensee's use of the Premises is safe. Neither the exercise nor the failure by Licensor to exercise any rights granted in this Section will alter the liability allocation provided by this License.

LIABILITY AND INSURANCE

11. Liability and Indemnification.

11.1 For purposes of this License: (a) "**Indemnitees**" means Licensor and Licensor's affiliated companies, partners, successors, assigns, legal representatives, officers, directors, shareholders, employees, and agents; (b) "**Liabilities**" means all claims, liabilities, fines, penalties, costs, damages, losses, liens, causes of action, suits, demands, judgments, and expenses (including, without limitation, court costs, reasonable attorneys' fees, costs of investigation, removal and remediation, and governmental oversight costs) environmental or otherwise; and (c) "**Licensee Parties**" means Licensee or Licensee's officers, agents, invitees, licensees, employees, or contractors, or any party directly or indirectly employed by any of them, or any party they control or exercise control over.

11.2 **TO THE FULLEST EXTENT PERMITTED BY LAW, LICENSEE SHALL, AND SHALL CAUSE ITS CONTRACTOR TO, RELEASE, INDEMNIFY, DEFEND AND HOLD HARMLESS INDEMNITEES FOR, FROM, AND AGAINST ANY AND ALL LIABILITIES OF ANY NATURE, KIND, OR DESCRIPTION DIRECTLY OR INDIRECTLY ARISING OUT OF, RESULTING FROM, OR RELATED TO (IN WHOLE OR IN PART):**

11.2.1 **THIS LICENSE, INCLUDING, WITHOUT LIMITATION, ITS ENVIRONMENTAL PROVISIONS,**

11.2.2 **ANY RIGHTS OR INTERESTS GRANTED PURSUANT TO THIS LICENSE,**

11.2.3 **LICENSEE'S OCCUPATION AND USE OF THE PREMISES,**

11.2.4 **THE ENVIRONMENTAL CONDITION AND STATUS OF THE PREMISES CAUSED BY OR CONTRIBUTED TO BY LICENSEE, OR**

11.2.5 **ANY ACT OR OMISSION OF ANY LICENSEE PARTY.**

11.3 **TO THE FULLEST EXTENT PERMITTED BY LAW, LICENSEE NOW AND FOREVER WAIVES ANY AND ALL CLAIMS THAT BY VIRTUE OF ENTERING INTO THIS LICENSE, LICENSOR IS A GENERATOR, OWNER, OPERATOR, ARRANGER, OR TRANSPORTER FOR THE PURPOSES OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT, AS AMENDED ("CERCLA") OR OTHER ENVIRONMENTAL LAWS (DEFINED BELOW). LICENSEE WILL INDEMNIFY, DEFEND, AND HOLD THE INDEMNITEES HARMLESS FROM ANY AND ALL SUCH CLAIMS. NOTHING IN THIS LICENSE IS MEANT BY EITHER PARTY TO CONSTITUTE A WAIVER OF ANY INDEMNITEE'S COMMON CARRIER DEFENSES AND THIS LICENSE SHOULD NOT BE SO CONSTRUED. IF ANY AGENCY OR COURT CONSTRUES THIS LICENSE TO BE A WAIVER OF ANY INDEMNITEE'S COMMON CARRIER DEFENSES, LICENSEE AGREES TO INDEMNIFY, HOLD HARMLESS, AND DEFEND INDEMNITEES FOR ANY LIABILITIES RELATED TO THAT CONSTRUCTION OF THIS LICENSE. IN NO EVENT AS BETWEEN LICENSOR AND LICENSEE AS TO USE OF THE PREMISES AS CONTEMPLATED BY THIS LICENSE SHALL LICENSOR BE RESPONSIBLE TO LICENSEE FOR THE ENVIRONMENTAL CONDITION OF THE PREMISES.**

11.4 **IF ANY EMPLOYEE OF ANY LICENSEE PARTY ASSERTS THAT HE OR SHE IS AN EMPLOYEE OF ANY INDEMNITEE, TO THE FULLEST EXTENT PERMITTED BY LAW, LICENSEE SHALL, AND SHALL CAUSE ITS CONTRACTOR TO, RELEASE, INDEMNIFY, DEFEND, AND HOLD THE INDEMNITEES HARMLESS FROM AND AGAINST ANY LIABILITIES ARISING OUT OF OR RELATED TO (IN WHOLE OR IN PART) ANY SUCH ASSERTION INCLUDING, BUT NOT LIMITED TO, ASSERTIONS OF EMPLOYMENT BY AN INDEMNITEE RELATED TO THE FOLLOWING OR ANY PROCEEDINGS THEREUNDER: THE FEDERAL EMPLOYERS' LIABILITY ACT, THE SAFETY APPLIANCE ACT, THE LOCOMOTIVE INSPECTION ACT, THE OCCUPATIONAL SAFETY AND HEALTH ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT, AND ANY SIMILAR STATE OR FEDERAL STATUTE.**

11.5 **THE FOREGOING OBLIGATIONS OF LICENSEE SHALL NOT APPLY TO THE EXTENT LIABILITIES ARE PROXIMATELY CAUSED BY THE GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF ANY INDEMNITEE, BUT SHALL APPLY TO ALL OTHER LIABILITIES, INCLUDING THOSE ARISING FROM OR ATTRIBUTED TO ANY OTHER ALLEGED OR ACTUAL NEGLIGENCE, INTENTIONAL ACTS, OR STRICT LIABILITY OF ANY INDEMNITEE.**

11.6 Upon written notice from Licensor, Licensee agrees to assume the defense of any lawsuit or other proceeding brought against any Indemnitee by any entity, relating to any matter covered by this License for which Licensee has an obligation to assume liability for and/or save and hold harmless any Indemnitee. Licensee shall pay all costs and expenses incident to such defense, including, but not limited to, reasonable attorneys' fees, investigators' fees, litigation and appeal expenses, settlement payments, and amounts paid in satisfaction of judgments.

12. Personal Property Risk of Loss. **ALL PERSONAL PROPERTY, INCLUDING, BUT NOT LIMITED TO, FIXTURES, EQUIPMENT, OR RELATED MATERIALS UPON THE PREMISES WILL BE AT THE RISK OF LICENSEE ONLY, AND NO INDEMNITEE WILL BE LIABLE FOR ANY DAMAGE THERETO OR THEFT THEREOF, WHETHER OR NOT DUE IN WHOLE OR IN PART TO THE NEGLIGENCE OF ANY INDEMNITEE.**

13. Insurance. Licensee shall, at its sole cost and expense, procure and maintain during the life of this License the following insurance coverage:

13.1 Commercial General Liability Insurance. This insurance shall contain broad form contractual liability with a combined single limit of a minimum of $2,000,000 each occurrence and an aggregate limit of at least $4,000,000 but in no event less than the amount otherwise carried by Licensee. Coverage must be purchased on a post 2004 ISO occurrence or equivalent and include coverage for, but not limited to, the following:

- Bodily Injury and Property Damage
- Personal Injury and Advertising Injury
- Fire legal liability
- Products and completed operations

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- The definition of insured contract shall be amended to remove any exclusion or other limitation for any work being done within 50 feet of railroad property.
- Waiver of subrogation in favor of and acceptable to Licensor.
- Additional insured endorsement in favor of and acceptable to Licensor and Jones Lang LaSalle Brokerage, Inc.
- Separation of insureds.
- The policy shall be primary and non-contributing with respect to any insurance carried by Licensor.

It is agreed that the workers' compensation and employers' liability related exclusions in the Commercial General Liability Insurance policy(s) required herein are intended to apply to employees of the policy holder and shall not apply to Licensor's employees.

No other endorsements limiting coverage may be included on the policy.

13.2 Business Automobile Insurance. This insurance shall contain a combined single limit of at least $1,000,000 per occurrence, and include coverage for, but not limited to the following:

- Bodily injury and property damage.
- Any and all vehicles owned, used or hired.

This policy shall also contain the following endorsements, which shall be indicated on the certificate of insurance:

- Waiver of subrogation in favor of and acceptable to Licensor.
- Additional insured endorsement in favor of and acceptable to Licensor.
- Separation of insureds.
- The policy shall be primary and non-contributing with respect to any insurance carried by Licensor.

13.3 Workers' Compensation and Employers' Liability Insurance. This insurance shall include coverage for, but not limited to:

- Licensee's statutory liability under the workers' compensation laws of the state(s) in which the services are to be performed. If optional under state laws, the insurance must cover all employees anyway.
- Employers' Liability (Part B) with limits of at least $500,000 each accident, $500,000 by disease policy limit, $500,000 by disease each employee.

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- Waiver of subrogation in favor of and acceptable to Licensor.

13.4 Intentionally deleted.

13.5 Intentionally deleted.

13.6 Other Requirements:

13.6.1 Where allowable by law, all policies (applying to coverage listed above) shall contain no exclusion for punitive damages.

13.6.2 Licensee agrees to waive its right of recovery against Licensor for all claims and suits against Licensor. In addition, Licensee's insurers, through the terms of the policy or a policy endorsement, must waive their right of subrogation against Licensor for all claims and suits, and the certificate of insurance must reflect the waiver of subrogation endorsement. Licensee further waives its right of recovery, and its insurers must also waive their right of subrogation against Licensor for loss of Licensee's owned or leased property, or property under Licensee's care, custody, or control.

13.6.3 Licensee is not allowed to self-insure without the prior written consent of Licensor. If granted by Licensor, any self-insured retention or other financial responsibility for claims shall be covered directly by Licensee in lieu of insurance. Any and all Licensor liabilities that would otherwise, in accordance with the provisions of this License, be covered by Licensee's insurance will be covered as if Licensee elected not to include a self-insured retention or other financial responsibility for claims.

13.6.4 Prior to entering the Premises, Licensee shall furnish to Licensor an acceptable certificate(s) of insurance including an original signature of the authorized representative evidencing the required coverage, endorsements, and amendments. Licensee shall notify Licensor in writing at least 30 days prior to any cancellation, non-renewal, substitution, or material alteration. In the event of a claim or lawsuit involving Licensor arising out of this License, Licensee will make available any required policy covering such claim or lawsuit.

13.6.5 Any insurance policy shall be written by a reputable insurance company acceptable to Licensor or with a current Best's Guide Rating of A- and Class VII or better, and authorized to do business in the state(s) in which the service is to be provided.

13.6.6 If coverage is purchased on a "claims made" basis, Licensee hereby agrees to maintain coverage in force for a minimum of three years after expiration or termination of this License. Annually, Licensee agrees to provide evidence of such coverage as required hereunder.

13.6.7 Licensee represents that this License has been thoroughly reviewed by Licensee's insurance agent(s)/broker(s), who have been instructed by Licensee to procure the insurance coverage required by this License. Allocated Loss Expense shall be in addition to all policy limits for coverages referenced above.

13.6.8 Not more frequently than once every five years, Licensor may reasonably modify the required insurance coverage to reflect then-current risk management practices in the railroad industry and underwriting practices in the insurance industry.

13.6.9 If any portion of the operation is to be subcontracted by Licensee, Licensee shall require that the subcontractor shall provide and maintain insurance coverages as set forth herein, naming Licensor as an additional insured, and shall require that the subcontractor shall release, defend and indemnify Licensor to the same extent and under the same terms and conditions as Licensee is required to release, defend and indemnify Licensor herein.

13.6.10 Failure to provide evidence as required by this **Section 13** shall entitle, but not require, Licensor to terminate this License immediately. Acceptance of a certificate that does not comply with this Section shall not operate as a waiver of Licensee's obligations hereunder.

13.6.11 The fact that insurance (including, without limitation, self-insurance) is obtained by Licensee shall not be deemed to release or diminish the liability of Licensee, including, without limitation, liability under the indemnity provisions of this License. Damages recoverable by Licensor shall not be limited by the amount of the required insurance coverage.

13.6.12 These insurance provisions are intended to be a separate and distinct obligation on the part of the Licensee. Therefore, these provisions shall be enforceable and Licensee shall be bound thereby regardless of whether or not indemnity provisions are determined to be enforceable.

13.6.13 For purposes of this **Section 13**, Licensor shall mean "Burlington Northern Santa Fe, LLC", "BNSF Railway Company" and the subsidiaries, successors, assigns and affiliates of each.

COMPLIANCE WITH LAWS, REGULATIONS, AND ENVIRONMENTAL MATTERS

14. Compliance with Laws, Rules, and Regulations.

14.1 Licensee shall observe and comply with any and all laws, statutes, regulations, ordinances, orders, covenants, restrictions, or decisions of any court of competent jurisdiction ("**Legal Requirements**") relating to Licensee's use of the Premises.

14.2 Prior to entering the Premises, Licensee shall and shall cause its contractor(s) to comply with all of Licensor's applicable safety rules and regulations. Licensee must ensure that each of its employees, contractors, agents or invitees entering upon the Premises completes the safety orientation program at the website "www.BNSFcontractor.com" (the "**Safety Orientation**") within one (1) year prior to entering upon the Premises. Additionally, Licensee must ensure that each and every employee of Licensee, its contractors, agents and invitees possess a card certifying completion of the Safety Orientation prior to entering upon the Premises. Licensee must renew the Safety Orientation annually.

15. Environmental.

15.1 Licensee shall strictly comply with all federal, state and local environmental Legal Requirements and regulations in its use of the Premises, including, but not limited to, the Resource Conservation and Recovery Act, as amended (RCRA), the Clean Water Act, the Oil Pollution Act, the Hazardous Materials Transportation Act, and CERCLA (collectively referred to as the "**Environmental Laws**"). Licensee shall not maintain a treatment, storage, transfer or disposal facility, or underground storage tank, as defined by Environmental Laws on the Premises. Licensee shall not release or suffer the release of oil or hazardous substances, as defined by Environmental Laws on or about the Premises.

15.2 Licensee covenants that it will not handle or transport "hazardous waste" or "hazardous substances", as "hazardous waste" and "hazardous substances" may now or in the future be defined by any federal, state, or local governmental agency or body through or on Licensor's property. Licensee agrees periodically to furnish Licensor with proof, satisfactory to Licensor that Licensee is in compliance with the provisions of this **Section 15.2**.

15.3 Licensee shall give Licensor immediate notice to Licensor's Resource Operations Center at (800) 832-5452 of any known (i) release of hazardous substances on, from, or affecting the Premises, (ii) violation of Environmental Laws, or (iii) inspection or inquiry by governmental authorities charged with enforcing Environmental Laws with respect to Licensee's use of the Premises. Licensee shall use the best efforts to promptly respond to any release on, from, or affecting the Premises. Licensee also shall give Licensor immediate notice of all measures undertaken on behalf of Licensee to investigate, remediate, respond to or otherwise cure such release or violation.

15.4 If Licensor has notice from Licensee or otherwise of a release or violation of Environmental Laws arising in any way with respect to the premises which occurred or may occur during the term of this License, Licensor may require Licensee, at Licensee's sole risk and expense, to take timely measures to investigate, remediate, respond to or otherwise cure such release or violation affecting the Premises or Licensor's right-of-way.

15.5 Licensee shall promptly report to Licensor in writing any conditions or activities upon the Premises known to Licensee which create a risk of harm to persons, property or the environment and shall take whatever action is necessary to prevent injury to persons, property, or the environment arising out of such conditions or activities; provided, however, that Licensee's reporting to Licensor shall not relieve Licensee of any obligation whatsoever imposed on it by this License. Licensee shall promptly respond to Licensor's request for information regarding said conditions or activities.

DISCALIMER OF WARRANTIES

16. No Warranties.

16.1 **LICENSOR'S DUTIES AND WARRANTIES ARE LIMITED TO THOSE EXPRESSLY STATED IN THIS LICENSE AND SHALL NOT INCLUDE ANY IMPLIED DUTIES OR IMPLIED WARRANTIES, NOW OR IN THE FUTURE. NO REPRESENTATIONS OR WARRANTIES HAVE BEEN MADE BY LICENSOR OTHER THAN THOSE CONTAINED IN THIS LICENSE. LICENSEE HEREBY WAIVES ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE PREMISES OR WHICH MAY EXIST BY OPERATION OF LAW OR IN EQUITY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, HABITABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

16.2 **LICENSOR MAKES NO WARRANTY, REPRESENTATION OR CONDITION OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING (A) THE SCOPE OF THE LICENSE OR OTHER RIGHTS GRANTED HEREUNDER TO LICENSEE OR (B) WHETHER OR NOT LICENSEE'S CONSTRUCTION, MAINTENANCE, OWNERSHIP, USE OR OPERATION OF THE PREMISES WILL VIOLATE OR INFRINGE UPON THE RIGHTS, INTERESTS AND ESTATES OF THIRD PARTIES, INCLUDING, WITHOUT LIMITATION, ANY LEASES, USE RIGHTS, EASEMENTS AND LIENS OF ANY THIRD PARTY.**

17. Disclaimer of Warranty for Quiet Enjoyment. **LICENSOR DOES NOT WARRANT ITS TITLE TO THE PREMISES NOR UNDERTAKE TO DEFEND LICENSEE IN THE PEACEABLE POSSESSION OR USE THEREOF. NO COVENANT OF QUIET ENJOYMENT IS MADE.**

18. Eviction at Risk of Licensee. In case of the eviction of Licensee by anyone owning, claiming title to, or claiming any interest in the Premises, or by the abandonment by Licensor of the affected rail corridor, Licensor shall not be liable (i) to refund Licensee any compensation paid hereunder, except for the pro-rata part of any recurring charge paid in advance, or (ii) for any damage Licensee sustains in connection with the eviction.

DEFAULT, TERMINATION, AND SURRENDER

19. Default and Termination. In addition to and not in limitation of Licensor's right to terminate for failure to provide evidence of insurance as required pursuant to the terms of **Section 13**, the following events are also deemed to be events of default pursuant to which Licensor has the right to terminate as set forth below:

19.1 If default shall be made in any of Licensee's covenants, agreements, or obligations contained in this License and Licensee fails to cure said default within thirty (30) days after written notice is provided to Licensee by Licensor, or in case of any assignment or transfer of this License in violation of **Section 21** below, Licensor may, at its option, terminate this License by serving five (5) days' notice in writing upon Licensee. Notwithstanding the foregoing, Licensor shall have the right to terminate this License immediately if Licensee fails to provide evidence of insurance as required in **Section 13**.

19.2 Should Licensee not comply fully with the obligations of **Section 15** regarding the handling or transporting of hazardous waste or hazardous material, notwithstanding anything contained in any other provision of this License, Licensor may, at its option, terminate this License by serving five (5) days' notice of termination upon Licensee.

19.3 Any waiver by Licensor of any default or defaults shall not constitute a waiver of the right to terminate this License for any subsequent default or defaults, nor shall any such waiver in any way affect Licensor's ability to enforce any Section of this License. The remedy set forth in

this **Section 19** shall be in addition to, and not in limitation of, any other remedies that Licensor may have at law or in equity.

19.4 In addition to and not in limitation of Licensor's rights to terminate this License for failure to provide evidence of insurance or occurrence of defaults as described above, this License may be terminated by either party, at any time, by serving thirty (30) days' written notice of termination upon the other party. Such termination shall not release either party hereto from any liability or obligation under the License, whether of indemnity or otherwise, resulting from any acts, omissions or events happening prior to the date of termination or thereafter in case by the terms of the License it is provided that anything shall or may be done after termination hereof.

20. Surrender of the Premises.

20.1 On or before expiration or termination of this License for any reason, Licensee shall, at its sole cost and expense:

20.1.1 remove all of its equipment from the Premises;

20.1.2 report and restore any damage to the Premises or Licensor's other property arising from, growing out of, or connected with Licensee's use of the Premises;

20.1.3 remedy any unsafe conditions on the Premises created or aggravated by Licensee; and

20.1.4 leave the Premises in the condition which existed as of the Effective Date of this License.

20.2 Upon any expiration or termination of this License, if Licensee fails to surrender the Premises to Licensor or if Licensee fails to complete its obligations under **Section 20.1** above (the "**Restoration Obligations**"), Licensee shall have a limited license to enter upon the Premises solely to the extent necessary for Licensee to complete the Restoration Obligations, and all liabilities and obligations of Licensee hereunder shall continue in effect until the Premises are surrendered and the Restoration Obligations are completed. Neither termination nor expiration shall release Licensee from any liability or obligation under this License, whether of indemnity or otherwise, resulting from any acts, omissions or events happening prior to the date of termination, or, if later, the date when Licensee surrenders the Premises and all of the Restoration Obligations are completed.

20.3 If Licensee fails to complete the Restoration Obligations within thirty (30) days after the date of such termination of its tenancy, then Licensor may, at its election, either: (i) remove the Premises and the other Improvements or otherwise restore the Premises, and in such event Licensee shall, within thirty (30) days after receipt of bill therefor, reimburse Licensor for cost incurred, (ii) upon written notice to Licensee, take and hold the personal property and the other Improvements and personal property as its sole property, without payment or obligation to Licensee therefor, or (iii) specifically enforce Licensee's obligation to restore and/or pursue any remedy at law or in equity against Licensee for failure to so restore. Further, if Licensor has consented to the construction workspace for concrete wall being built outside BNSF ROW and the other Improvements remaining on the Premises following termination, Licensee shall, upon request by Licensor, provide a bill of sale in a form acceptable to Licensor conveying the personal property and the other Improvements to Licensor.

MISCELLANEOUS

21. Successors and Assigns. All provisions contained in this License shall be binding upon, inure to the benefit of, and be enforceable by the respective successors and assigns of Licensor and Licensee to the same extent as if each such successor and assign was named a party to this License.

22. Assignment.

22.1 Licensee may not sell, assign, transfer, or hypothecate this License or any right, obligation, or interest herein (either voluntarily or by operation of law, merger, or otherwise) without the prior written consent of Licensor, which consent may not be unreasonably withheld or delayed by Licensor. Any attempted assignment by Licensee in violation of this **Section 21** shall be a breach of this License and, in addition, shall be voidable by Licensor in its sole and absolute discretion.

22.2 For purposes of this **Section 21**, the word "assign" shall include without limitation (a) any sale of the equity interests of Licensee following which the equity interest holders of Licensee immediately prior to such sale own, directly or indirectly, less than 50% of the combined voting power of the outstanding voting equity interests of Licensee, (b) any sale of all or substantially all of the assets of (i) Licensee and (ii) to the extent such entities exist, Licensee's parent and subsidiaries, taken as a whole, or (c) any reorganization, recapitalization, merger or consolidation involving Licensee. Notwithstanding the foregoing, any reorganization, recapitalization, merger or consolidation following which the equity interest holders of Licensee immediately prior to such reorganization, recapitalization, merger or consolidation own, directly or indirectly, at least fifty percent (50%) of the combined voting power of the outstanding voting equity interests of Licensee or any successor thereto or the entity resulting from such reorganization, recapitalization, merger or consolidation shall not be deemed an assignment. THIS LICENSE SHALL NOT RUN WITH THE LAND WITHOUT THE EXPRESS WRITTEN CONSENT OF LICENSOR, SUCH CONSENT TO BE IN LICENSOR'S SOLE DISCRETION.

22.3 Notwithstanding the provisions of **Section 21.1** above or anything contained in this License to the contrary, if Licensee sells, assigns, transfers, or hypothecates this License or any interest herein in contravention of the provisions of this License (a "**Purported Assignment**") to another party (a "**Purported Transferee**"), the Purported Transferee's enjoyment of the rights and privileges granted under this License shall be deemed to be the Purported Transferee's agreement to be bound by all of the terms and provisions of this License, including but not limited to the obligation to comply with the provisions of **Section 13** above concerning insurance requirements. In addition to and not in limitation of the foregoing, Licensee, for itself, its successors and assigns, shall indemnify, defend and hold harmless Licensor for all Liabilities of any nature, kind or description of any person or entity directly or indirectly arising out of, resulting from or related to (in whole or in part) a Purported Assignment.

22.4 The provisions of this **Section 21** shall survive the expiration or earlier termination of this License.

23. Notices. Any notice, invoice, or other writing required or permitted to be given hereunder by one party to the other shall be in writing and the same shall be given and shall be deemed to have been served and given if (i) placed in the United States mail, certified, return receipt requested, or (ii) deposited into the custody of a nationally recognized overnight delivery service, addressed to the party to be notified at the address for such party specified below, or to such other address as the party to be notified may designate by giving the other party no less than thirty (30) days' advance written notice of such change in address.

If to Licensor: Jones Lang LaSalle Brokerage, Inc.
4300 Amon Carter Blvd., Suite 100
Fort Worth, TX 76155
Attn: Permits/Licenses

with a copy to: BNSF Railway Company
2650 Lou Menk Dr.
Fort Worth, TX 76131
Attn: Senior Manager Real Estate

If to Licensee: City of Temple
3210 E. Avenue H
Building A, Suite 107
Temple, TX 76501

24. Survival. Neither termination nor expiration will release either party from any liability or obligation under this License, whether of indemnity or otherwise, resulting from any acts, omissions or events happening prior to the date of termination or expiration, or, if later, the date when the Premises are restored to its condition as of the Effective Date.

25. Recordation. It is understood and agreed that this License shall not be placed or allowed to be placed on public record.

26. Applicable Law. All questions concerning the interpretation or application of provisions of this License shall be decided according to the substantive laws of the State of Texas without regard to conflicts of law provisions.

27. Severability. To the maximum extent possible, each provision of this License shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this License shall be prohibited by, or held to be invalid under, applicable law, such provision shall be ineffective solely to the extent of such prohibition or invalidity, and this shall not invalidate the remainder of such provision or any other provision of this License.

28. Integration. This License is the full and complete agreement between Licensor and Licensee with respect to all matters relating to Licensee's use of the Premises, and supersedes any and all other agreements between the parties hereto relating to Licensee's use of the Premises as described herein. However, nothing herein is intended to terminate any surviving obligation of Licensee or Licensee's obligation to defend and hold Licensor harmless in any prior written agreement between the parties.

29. Joint and Several Liability. If Licensee consists of two or more parties, all the covenants and agreements of Licensee herein contained shall be the joint and several covenants and agreements of such parties.

30. Waiver. The waiver by Licensor of the breach of any provision herein by Licensee shall in no way impair the right of Licensor to enforce that provision for any subsequent breach thereof.

31. Interpretation.

31.1 This License shall be interpreted in a neutral manner, and not more strongly for or against any party based upon the source of the draftsmanship; both parties hereby agree that this License shall not be subject to the principle that a contract would be construed against the party which drafted the same. Article titles, headings to sections and paragraphs and the table of contents (if any) are inserted for convenience of reference only and are not intended to be a part or to affect the meaning or interpretation hereof. The exhibit or exhibits referred to herein shall be construed with and as an integral part of this License to the same extent as if they were set forth verbatim herein.

31.2 As used herein, "include", "includes" and "including" are deemed to be followed by "without limitation" whether or not they are in fact followed by such words or words of like import; "writing", "written" and comparable terms refer to printing, typing, lithography and other means of reproducing words in a visible form; references to any person are also to that person's successors and permitted assigns; "hereof", "herein", "hereunder" and comparable terms refer to the entirety hereof and not to any particular article, section, or other subdivision hereof or attachment hereto; references to any gender include references to the masculine or feminine as the context requires; references to the plural include the singular and vice versa; and references to this License or other documents are as amended, modified or supplemented from time to time.

32. Counterparts. This License may be executed in multiple counterparts, each of which shall, for all purposes, be deemed an original but which together shall constitute one and the same instrument, and the signature pages from any counterpart may be appended to any other counterpart to assemble fully executed documents, and counterparts of this License may also be exchanged via email or electronic facsimile machines and any email or electronic facsimile of any party's signature shall be deemed to be an original signature for all purposes.

33. Licensor's Representative. Jones Lang LaSalle Brokerage, Inc. is acting as representative for BNSF Railway Company.

END OF PAGE – SIGNATURE PAGE FOLLOWS

This License has been duly executed by the parties hereto as of the date below each party's signature; to be effective, however, as of the Effective Date.

LICENSOR:

BNSF Railway Company, a Delaware corporation

By: Jones Lang LaSalle Brokerage, Inc.
4200 Buckingham Rd., Suite 110
Fort Worth, TX 76155

By: Shane Krueger

Name: Shane Krueger

Title: Vice President

Date: April 26, 2022

LICENSEE:

City of Temple, a Texas municipality

By:

Name: Bryan Myers

Title: City Manager

Date: 4-8-2022

Approved As To Form
Charla R Thomas
City Attorney's Office

COORDINATE SYSTEM: TX_C

TRACKING NO. 22W-13244

EXHIBIT "A"

TRIM LINE

SCALE: 1 IN = 50 FT
RED RIVER DIV.
LAMPASAS SUBDIV. L.S. 7508
DATE: 3/4/2022

SURVEY:
PENNINGTON, E

MAP REF. 509525

LEGEND:

- PREMISES
- RIGHT OF WAY LINE
- TRACK

DESCRIPTION:
A PARCEL(S) OF LAND CONTAINING A TOTAL OF 768 SQ FT. (0.02 A.C.) MORE OR LESS SHOWN HATCHED. TO BE USED FOR CONCRETE MASONRY WALL APPLIED TO NORTH SIDE OF BUILDING OUTSIDE OF ROW - NEED CONSTRUCTION WORKSPACE WITHIN BNSF ROW.

TEMPLE
COUNTY OF BELL

STATE OF TX

DRAWN BY:NAF DRAWING NO. 84096

A3 – BNSF Railroad General License Permit

PIPELINE LICENSE

THIS PIPELINE LICENSE ("**License**") is made to be effective _____, 2022 (the "**Effective Date**") by and between **BNSF RAILWAY COMPANY**, a Delaware corporation ("**Licensor**") and **COMPANY**, a _____ corporation ("**Licensee**").

In consideration of the mutual covenants contained herein, the parties agree to the following:

GENERAL

1. Grant of License. Licensor hereby grants Licensee a non-exclusive license, subject to all rights, interests, and estates of third parties, including, without limitation, any leases, use rights, easements, liens, or other encumbrances, and upon the terms and conditions set forth below, to construct and maintain, in strict accordance with the drawings and specifications approved by Licensor as part of Licensee's application process (the "**Drawings and Specifications**"), Number of pipes pipeline[s], Size of carrier pipe inches in diameter inside a(n) Size of casing inch Casing Material casing (collectively, the "**Pipeline**"), across or along Licensor's rail corridor at or near the station of City, County of County, State of State, Line Segment____, Mile Post ____ as shown on the attached Drawing No._____, dated _____, attached hereto as **Exhibit "A"** and incorporated herein by reference (the "**Premises**").

2. Term. This License shall commence on the Effective Date and shall continue for a period of twenty-five (25) years, subject to prior termination as hereinafter described.

3. Existing Improvements. Licensee shall not disturb any improvements of Licensor or Licensor's existing lessees, licensees, easement beneficiaries or lien holders, if any, or interfere with the use, repair, maintenance or replacement of such improvements.

4. Use of the Premises. Licensee shall use the Premises solely for construction, maintenance, and use of the Pipeline in accordance with the Drawings and Specifications. The Pipeline shall carry «Contents_of_Pipe», and Licensee shall not use the Pipeline to carry any other material or use the Premises for any other purpose. Licensee is expressly prohibited from using or allowing any telecommunication facilities or equipment within the Premises, or using or allowing the use of the Premises for any other purpose.

5. Alterations. Except as set forth in this License, Licensee may not make any alterations to the Premises or permanently affix anything to the Premises or any buildings or other structures adjacent to the Premises without Licensor's prior written consent.

COMPENSATION ***For petroleum products, choose the appropriate fee structure for Sec. 6 and delete the remaining optional language****

6. License Fee. **[**Licensee shall pay Licensor, prior to the Effective Date, a one-time payment (in lieu of recurring periodic fixed license fees) in the amount the sum of «Fee_in_Words» and No/100 Dollars ($«Fee_in_Dollars») as compensation for the use of the Premises.**]** **[**Licensee shall pay Licensor, as compensation for the use of the Premises, the sum of _____ and No/100 Dollars ($_____) for the first year this License is in effect, and the annual sum of _____ and No/100 Dollars ($_____) beginning with the second year this License is in effect, payable annually and in advance. Licensor reserves the right to implement a reasonable increase as conditions warrant. Billing or acceptance by Licensor of any licensing fee shall not imply a definite term or otherwise restrict either party from terminating this License as provided herein.**]**

7. Costs and Expenses.

   7.1 For the purpose of this License, "cost" or "costs" and "expense" or "expenses" includes, but is not limited to, actual labor and material costs including all assignable additives, and material and supply costs at current value where used.

7.2 Licensee agrees to reimburse Licensor (pursuant to the terms of **Section 8** below) for all costs and expenses incurred by Licensor in connection with Licensee's use of the Premises or the presence, construction and maintenance of the Pipeline, including but not limited to the furnishing of Licensor's flaggers and any vehicle rental costs incurred, inspection coordination, safety, mobilization and/or other observation services described in this License (collectively, the "**Services**"). Licensee shall bear the cost of the Services, when deemed necessary by Licensor's representative. Flagging costs shall include, but not be limited to, the following: pay for at least an eight (8) hour basic day with time and one-half or double time for overtime, rest days and holidays (as applicable); vacation allowance; paid holidays (as applicable); railway and unemployment insurance; public liability and property damage insurance; health and welfare benefits; transportation; meals; lodging and supervision. Negotiations for railway labor or collective bargaining agreements and rate changes authorized by appropriate Federal authorities may increase flagging rates. Flagging rates in effect at the time of performance by the flaggers will be used to calculate the flagging costs pursuant to this **Section 7**.

7.3 Licensor, at its sole discretion, may elect to designate a third party (the "**Scheduling Agent**"), to perform and/or arrange for the performance of the Services.

8. Payment Terms. All invoices are due thirty (30) days after the date of invoice. If Licensee fails to pay any monies due to Licensor within thirty (30) days after the invoice date, then Licensee shall pay interest on such unpaid sum from the due date until paid at an annual rate equal to the lesser of (i) the prime rate last published in *The Wall Street Journal* in the preceding December plus two and one-half percent (2-1/2%), or (ii) the maximum rate permitted by law.

LICENSOR'S RESERVED RIGHTS

9. Reserved Rights of Use. Licensor excepts and reserves the right, to be exercised by Licensor and any other parties who may obtain written permission or authority from Licensor:

9.1 to maintain, use, operate, repair, replace, modify and relocate any utility, power or communication pipe/lines/cables and appurtenances (other than the Pipeline) and other facilities or structures of like character upon, over, under or across the Premises existing as of the Effective Date;

9.2 to construct, maintain, renew, use, operate, change, modify and relocate any tracks or additional facilities, structures and related appurtenances upon, over, under or across the Premises; or

9.3 to use the Premises in any manner as Licensor in its sole discretion deems appropriate, provided Licensor uses all commercially reasonable efforts to avoid material interference with the use of the Premises by Licensee for the purpose specified in **Section 4** above.

10. Right to Require Relocation. If at any time during the term of this License, Licensor desires the use of its rail corridor in such a manner as would, in Licensor's reasonable opinion, be interfered with by the Pipeline, Licensee shall, at its sole expense, within thirty (30) days after receiving written notice from Licensor to such effect, make such changes in the Pipeline as in the sole discretion of Licensor may be necessary to avoid interference with the proposed use of Licensor's rail corridor, including, without limitation, the relocation of the Pipeline, or the construction of a new pipeline to replace the Pipeline. Notwithstanding the foregoing, Licensee agrees to make all emergency changes and minor adjustments, as determined by Licensor in its sole discretion, to the Pipeline promptly upon Licensor's request.

LICENSEE'S OPERATIONS

11. Construction and Maintenance of the Pipeline.

11.1 Licensee shall not enter the Premises or commence construction unless accompanied by Licensor's representative, the Scheduling Agent or its designee. Licensee shall notify Licensor's Roadmaster, Roadmaster information, at least ten (10) business days prior to installation of the Pipeline and prior to entering the Premises for any subsequent maintenance thereon. In the event of emergency, Licensee shall notify Licensor of Licensee's entry onto the Premises at the

telephone number above as soon as practicable and shall promptly thereafter follow up with written notice of such entry.

11.2 Licensee's on-site supervisors shall retain/maintain a fully executed copy of this License at all times while on the Premises.

11.3 While on the Premises, Licensee shall use only public roadways to cross from one side of Licensor's tracks to the other.

11.4 Any contractors or subcontractors performing work on the Pipeline or entering the Premises on behalf of Licensee shall be deemed servants and agents of Licensee for purposes of this License.

11.5 Under no conditions shall Licensee be permitted to conduct any tests, investigations or any other activity using mechanized equipment and/or machinery, or place or store any mechanized equipment, tools or other materials, within twenty-five (25) feet of the centerline of any railroad track on the Premises unless Licensee has obtained prior written approval from Licensor. Licensee shall, at its sole cost and expense, perform all activities on and about the Premises, including without limitation all construction and maintenance of the Pipeline, in such a manner and of such materials as not at any time to endanger or interfere with (i) the existence or use of present or future tracks, roadbeds, or property of Licensor, (ii) the safe operation and activities of Licensor or existing third parties, or (iii) the rights or interests of third parties. If ordered to cease using the Premises at any time by Licensor's personnel due to any hazardous condition, Licensee shall immediately do so. Notwithstanding the foregoing right of Licensor, the parties agree that Licensor has no duty or obligation to monitor Licensee's use of the Premises to determine the safe nature thereof, it being solely Licensee's responsibility to ensure that Licensee's use of the Premises is safe. Neither the exercise nor the failure by Licensor to exercise any rights granted in this Section will alter the liability allocation provided by this License.

11.6 Licensee shall, at its sole cost and expense, construct and maintain the Pipeline in such a manner and of such material that the Pipeline will not at any time endanger or interfere with (i) the existence or use of present or future tracks, roadbeds, or property of Licensor, (ii) the safe operation and activities of Licensor or existing third parties, or (iii) the rights or interests of third parties. The construction of the Pipeline shall be completed within one (1) year of the Effective Date, and any subsequent maintenance shall be completed within one (1) year of initiation. Within fifteen (15) days after completion of the construction of the Pipeline or the performance of any subsequent maintenance thereon, Licensee shall, at Licensee's own cost and expense, restore the Premises to substantially their state as of the Effective Date, unless otherwise approved in advance by Licensor in writing. On or before expiration or termination of this License for any reason, Licensee shall, at its sole cost and expense, surrender the Premises to Licensor pursuant to the terms and conditions set forth in **Section 24** hereof.

11.7 Licensor may direct one or more of its field engineers or inspectors to observe or inspect the construction and/or maintenance of the Pipeline at any time for compliance with the Drawings and Specifications and Legal Requirements (defined below). Licensee shall reimburse Licensor for the cost of such observation or inspection related services pursuant to **Section 8**. If ordered at any time to halt construction or maintenance of the Pipeline by Licensor's personnel due to non-compliance with the Drawings and Specifications or any other hazardous condition, Licensee shall immediately do so. Notwithstanding the foregoing right of Licensor, the parties agree that Licensor has no duty or obligation to observe or inspect, or to halt work on, the Pipeline, it being solely Licensee's responsibility to ensure that the Pipeline is constructed and maintained in strict accordance with the Drawings and Specifications and in a safe and workmanlike manner in compliance with all terms hereof. Neither the exercise of, nor the failure by Licensor to exercise, any right granted by this Section will alter in any way the liability allocation provided by this License. If at any time Licensee shall, in the sole judgment of Licensor, fail to properly perform its obligations under this **Section 11**, Licensor may, at its option and at Licensee's sole expense, arrange for the performance of such work as it deems necessary for the safety of its operations and activities. Licensee shall promptly reimburse Licensor for all costs and expenses of such

work, pursuant to the terms of **Section 8**. Licensor's failure to perform any obligations of Licensee shall not alter the liability allocation hereunder.

This paragraph 11.8 will be inserted if your installation method is HDD:

11.8 Cutting head must travel at 0.0% grade (or downward) beginning 25' (minimum) from centerline of track until it reaches a point 25' (minimum) from the centerline of track. Minimum pressure must be applied to pumping the slurry to the cutting head during drilling. This will deter the bentonite slurry used for lubrication from seeping up and fouling the track roadbed. A Flagman must be present during installation and will monitor the ballast and roadbed.

12. Boring and Excavation.

12.1 Prior to Licensee conducting any boring, excavation, or similar work on or about any portion of the Premises, Licensee shall contact the applicable State's call-before-you-dig utility location service to have 3rd parties mark the location of utilities. Licensee shall explore the proposed location for such work with hand tools to a depth of at least three (3) feet below the surface of the ground to determine whether pipelines or other structures exist below the surface, provided, however, that in lieu of the foregoing hand-tool exploration, Licensee shall have the right to use suitable detection equipment or other generally accepted industry practice (*e.g.*, consulting with the United States Infrastructure Corporation) to determine the existence or location of pipelines and other subsurface structures prior to drilling or excavating with mechanized equipment. Licensee shall request information from Licensor concerning the existence and approximate location of Licensor's underground lines, utilities, and pipelines at or near the vicinity of the proposed Pipeline by contacting Licensor's Telecommunications Helpdesk, currently at 1-800-533-2891 (option1, then option 7), at least ten (10) business days prior to installation of the Pipeline. Upon receiving Licensee's timely request, Licensor will provide Licensee with the information Licensor has in its possession regarding any existing underground lines, utilities, and pipelines at or near the vicinity of the proposed Pipeline and, if applicable, identify the location of such lines on the Premises pursuant to Licensor's standard procedures. Licensor does not warrant the accuracy or completeness of information relating to subsurface conditions of the Premises and Licensee's operations will be subject at all times to the liability provisions herein.

12.2 For all bores greater than 26-inch diameter and at a depth less than 10.0 feet below bottom of rail, a soil investigation must be performed by Licensee and reviewed by Licensor prior to construction. This study is to determine if granular material is present, and to prevent subsidence during the installation process. If the investigation determines in Licensor's reasonable opinion that granular material is present, Licensor may select a new location for Licensee's use, or may require Licensee to furnish for Licensor's review and approval, in Licensor's sole discretion, a remedial plan to deal with the granular material. Once Licensor has approved any such remedial plan in writing, Licensee shall, at Licensee's sole cost and expense, carry out the approved plan in accordance with all terms thereof and hereof.

12.3 No wells shall be installed without prior written approval from Licensor.

12.4 Any open hole, boring, or well constructed on the Premises by Licensee shall be safely covered and secured at all times when Licensee is not working in the actual vicinity thereof. Following completion of that portion of the work, all holes or borings constructed on the Premises by Licensee shall be:

12.4.1 filled in to surrounding ground level with compacted bentonite grout; or

12.4.2 otherwise secured or retired in accordance with any applicable Legal Requirement. No excavated materials may remain on Licensor's property for more than ten (10) days, but must be properly disposed of by Licensee in accordance with applicable Legal Requirements.

LIABILITY AND INSURANCE

13. Liability and Indemnification.

13.1 For purposes of this License: (a) "**Indemnitees**" means Licensor and Licensor's affiliated companies, partners, successors, assigns, legal representatives, officers, directors, shareholders, employees, and agents; (b) "**Liabilities**" means all claims, liabilities, fines, penalties, costs, damages, losses, liens, causes of action, suits, demands, judgments, and expenses (including, without limitation, court costs, reasonable attorneys' fees, costs of investigation, removal and remediation, and governmental oversight costs) environmental or otherwise; and (c) "**Licensee Parties**" means Licensee and Licensee's officers, agents, invitees, licensees, employees, or contractors, or any party directly or indirectly employed by any of them, or any party they control or exercise control over.

13.2 **TO THE FULLEST EXTENT PERMITTED BY LAW, LICENSEE SHALL, AND SHALL CAUSE ITS CONTRACTOR TO, RELEASE, INDEMNIFY, DEFEND AND HOLD HARMLESS INDEMNITEES FOR, FROM, AND AGAINST ANY AND ALL LIABILITIES OF ANY NATURE, KIND, OR DESCRIPTION DIRECTLY OR INDIRECTLY ARISING OUT OF, RESULTING FROM, OR RELATED TO (IN WHOLE OR IN PART):**

13.2.1 **THIS LICENSE, INCLUDING, WITHOUT LIMITATION, ITS ENVIRONMENTAL PROVISIONS,**

13.2.2 **ANY RIGHTS OR INTERESTS GRANTED PURSUANT TO THIS LICENSE,**

13.2.3 **LICENSEE'S OCCUPATION AND USE OF THE PREMISES,**

13.2.4 **THE ENVIRONMENTAL CONDITION AND STATUS OF THE PREMISES CAUSED BY OR CONTRIBUTED TO BY LICENSEE, OR**

13.2.5 **ANY ACT OR OMISSION OF ANY LICENSEE PARTY.**

13.3 **TO THE FULLEST EXTENT PERMITTED BY LAW, LICENSEE NOW AND FOREVER WAIVES AND WILL INDEMNIFY, DEFEND, AND HOLD THE INDEMNITEES HARMLESS FROM ANY AND ALL CLAIMS THAT BY VIRTUE OF ENTERING INTO THIS LICENSE, LICENSOR IS A GENERATOR, OWNER, OPERATOR, ARRANGER, OR TRANSPORTER FOR THE PURPOSES OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT, AS AMENDED ("CERCLA") OR OTHER ENVIRONMENTAL LAWS (DEFINED BELOW). NOTHING IN THIS LICENSE IS MEANT BY EITHER PARTY TO CONSTITUTE A WAIVER OF ANY INDEMNITEE'S COMMON CARRIER DEFENSES AND THIS LICENSE SHOULD NOT BE SO CONSTRUED. IF ANY AGENCY OR COURT CONSTRUES THIS LICENSE TO BE A WAIVER OF ANY INDEMNITEE'S COMMON CARRIER DEFENSES, LICENSEE AGREES TO INDEMNIFY, HOLD HARMLESS, AND DEFEND INDEMNITEES FOR ANY LIABILITIES RELATED TO THAT CONSTRUCTION OF THIS LICENSE. IN NO EVENT AS BETWEEN LICENSOR AND LICENSEE AS TO USE OF THE PREMISES AS CONTEMPLATED BY THIS LICENSE SHALL LICENSOR BE RESPONSIBLE TO LICENSEE FOR THE ENVIRONMENTAL CONDITION OF THE PREMISES.**

13.4 **IF ANY EMPLOYEE OF ANY LICENSEE PARTY ASSERTS THAT HE OR SHE IS AN EMPLOYEE OF ANY INDEMNITEE, TO THE FULLEST EXTENT PERMITTED BY LAW, LICENSEE SHALL, AND SHALL CAUSE ITS CONTRACTOR TO, RELEASE, INDEMNIFY, DEFEND, AND HOLD THE INDEMNITEES HARMLESS FROM AND AGAINST ANY LIABILITIES ARISING OUT OF OR RELATED TO (IN WHOLE OR IN PART) ANY SUCH ASSERTION INCLUDING, BUT NOT LIMITED TO, ASSERTIONS OF EMPLOYMENT BY AN INDEMNITEE RELATED TO THE FOLLOWING OR ANY PROCEEDINGS THEREUNDER: THE FEDERAL EMPLOYERS' LIABILITY ACT, THE SAFETY APPLIANCE ACT, THE LOCOMOTIVE INSPECTION ACT, THE OCCUPATIONAL SAFETY AND HEALTH ACT, THE**

RESOURCE CONSERVATION AND RECOVERY ACT, AND ANY SIMILAR STATE OR FEDERAL STATUTE.

13.5 **THE FOREGOING OBLIGATIONS OF LICENSEE SHALL NOT APPLY TO THE EXTENT LIABILITIES ARE PROXIMATELY CAUSED BY THE GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF ANY INDEMNITEE, BUT SHALL APPLY TO ALL OTHER LIABILITIES, INCLUDING THOSE ARISING FROM OR ATTRIBUTED TO ANY OTHER ALLEGED OR ACTUAL NEGLIGENCE, INTENTIONAL ACTS, OR STRICT LIABILITY OF ANY INDEMNITEE.**

13.6 Upon written notice from Licensor, Licensee agrees to assume the defense of any lawsuit or other proceeding brought against any Indemnitee by any entity, relating to any matter covered by this License for which Licensee has an obligation to assume liability for and/or save and hold harmless any Indemnitee. Licensee shall pay all costs and expenses incident to such defense, including, but not limited to, reasonable attorneys' fees, investigators' fees, litigation and appeal expenses, settlement payments, and amounts paid in satisfaction of judgments.

14. Personal Property Risk of Loss. **ALL PERSONAL PROPERTY, INCLUDING, BUT NOT LIMITED TO, FIXTURES, EQUIPMENT, OR RELATED MATERIALS UPON THE PREMISES WILL BE AT THE RISK OF LICENSEE ONLY, AND NO INDEMNITEE WILL BE LIABLE FOR ANY DAMAGE THERETO OR THEFT THEREOF, WHETHER OR NOT DUE IN WHOLE OR IN PART TO THE NEGLIGENCE OF ANY INDEMNITEE.**

15. Insurance. Licensee shall, at its sole cost and expense, procure and maintain during the term of this License the following insurance coverage:

15.1 Commercial General Liability “CGL” Insurance.

a. The policy will provide a minimum of $5,000,000 per occurrence and an aggregate limit of at least $10,000,000 but in no event will the coverage be in an amount less than the amount otherwise carried by Licensee. Coverage must be purchased on a post 2004 ISO occurrence form or equivalent and include coverage for, but not limited to, the following:
   - Bodily Injury and Property Damage
   - Personal Injury and Advertising Injury
   - Fire legal liability
   - Products and completed operations
   - Sudden and accidental pollution coverage
   - Contractual Liability for an “Insured Contract” consistent with the definition under the standard ISO general liability policy form.

b. This policy will include the following endorsements or language, which shall be indicated on or attached to the certificate of insurance:
   - The definition of “Insured Contract” will be amended to remove any exclusion or other limitation for any work being done within 50 feet of Licensor’s property;
   - Waiver of subrogation in favor of and acceptable to Licensor;
   - Additional insured endorsement in favor of and acceptable to Licensor and Jones Lang LaSalle Brokerage, Inc. to include coverage for ongoing and completed operations;
   - Separation of insureds;
   - The policy shall be primary and non-contributing with respect to any insurance carried by Licensor.

c. The parties agree that the workers’ compensation and employers’ liability related exclusions in the CGL policy(s) are intended to apply to employees of the policyholder and will not apply to Licensor’s employees.

d. No other endorsements that limit coverage with respect to Licensee’s obligations under this agreement may be included on the policy.

15.2 Business Automobile Insurance.

a. The insurance will provide minimum coverage with a combined single limit of at least $1,000,000 per accident, and include coverage for, but not limited to the following:
   - Bodily injury and property damage.
   - Any and all vehicles owned, used or hired.

b. The policy will include the following endorsements or language, which will be indicated on or attached to the certificate of insurance:
   - Waiver of subrogation in favor of and acceptable to Licensor;
   - Additional insured endorsement in favor of and acceptable to Licensor;
   - Separation of insureds;
   - The policy shall be primary and non-contributing with respect to any insurance carried by Licensor.

15.3 Workers' Compensation and Employers' Liability Insurance.

a. The policy will provide coverage of all employees performing any part of the installation or maintenance of the Pipeline including coverage for, but not limited to:
   - Licensee's statutory liability under the workers' compensation laws of the state(s) in which the work or services under this agreement are to be performed. The policy will cover all of Licensee's employees, regardless of whether such coverage is optional under the law of that state(s).
   - Employers' Liability (Part B) with limits of at least $500,000 each accident, $500,000 by disease policy limit, $500,000 by disease each employee.

b. The policy will include contain the following endorsements or language, which shall be indicated on or attached to the certificate of insurance:
   - Waiver of subrogation in favor of and acceptable to Licensor.

15.4 Railroad Protective Liability Insurance. The policy will name only Licensor as the Insured and will provide coverage of at least $5,000,000 per occurrence and $10,000,000 in the aggregate. The coverage obtained under this policy shall only be effective during the initial installation and/or construction of the Pipeline. **THE CONSTRUCTION OF THE PIPELINE SHALL BE COMPLETED WITHIN ONE (1) YEAR OF THE EFFECTIVE DATE.** If further maintenance of the Pipeline is needed at a later date, an additional Railroad Protective Liability Insurance Policy shall be required. The policy will be issued on a standard ISO form CG 00 35 12 04 and include the following:

- Endorsed to include the Pollution Exclusion Amendment.
- Endorsed to include the Limited Seepage and Pollution Endorsement.
- Endorsed to remove any exclusion for punitive damages.
- Endorsed to include Evacuation Expense Coverage Endorsement.
- No other endorsements restricting coverage may be added.
- The original policy must be provided to Licensor and Licensee shall not perform any work or services of any kind under this agreement until Licensor has reviewed and approved the policy.
- The definition of "Physical Damage to Property" will be endorsed to read: "means direct and accidental loss of or damage to all property owned by any named insured and all property in any named insured's care, custody and control (including, but not limited to rolling stock and their contents, mechanical construction equipment or motive power equipment, railroad tracks, roadbeds, catenaries, signals, tunnels, bridges and buildings) arising out of the acts or omissions of the contractor named on the Declarations."

In lieu of providing a Railroad Protective Liability Policy, for a period of one (1) year from the Effective Date, Licensee may participate in Licensor's Blanket Railroad Protective Liability Insurance Policy available to Licensee or its contractor. The limits of coverage are the same as above. The cost is $«RPLI_Fee».00.

- ❑ Licensee may **elect** to participate in Licensor's Blanket Policy;
- ❑ Licensee **declines** to participate in Licensor's Blanket Policy.

[*****OPTIONAL***: ADD § 15.5 IF PLL IS REQUIRED *AND* ADD "P" TO THE FORM NAME AT THE BOTTOM OF THE PAGE. IF PLL IS *NOT* REQUIRED, DELETE THIS SECTION 15.5 AND SUBSTITUTE THE PHRASE "Intentionally deleted." ****

15.5 Pollution Legal Liability (PLL) Insurance.

This insurance shall be in an amount of at least FIVE MILLION DOLLARS ($5,000,000) per claim including but not limited to coverage for the following:

- bodily injury, sickness, disease, mental anguish or shock sustained by any person, including death (with no requirement that the mental anguish be as a result of physical injury;
- property damage including physical injury to or destruction of tangible property including the resulting loss of use thereof, cleanup costs, and the loss of use of tangible property that has not been physically injured or destroyed;
- loss, costs or expense arising out of any (a) request, demand, order or statutory or regulatory requirement to test for, monitor, clean up, remove, contain, treat, detoxify or neutralize, or in any way respond to, or assess the effects of, pollutants; or (b) claim or suit for damage because of testing for, monitoring, cleaning up, removing, containing, treating, detoxifying or neutralizing, or in any way responding to, or assessing the effects of, pollutants;
- defense costs including costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages;
- coverage shall apply to sudden and non-sudden pollution conditions including the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon property damage;
- land, the atmosphere or any watercourse or body of water, which results in bodily injury or evacuation expense coverage;
- if coverage is purchased on a “claims made” basis, licensee hereby agrees to maintain coverage in force for a minimum of three years after expiration, cancellation or termination of this Agreement. Licensee agrees to provide evidence to BNSF annually or in the event of a material change of coverage, that it has the required coverage in place;
- amend the Contractual Liability exclusions and Employers Liability exclusion to provide coverage for liability assumed under contract;
- amend the definition of Property Damage to provide coverage for natural resource damage.

15.6.1 Where allowable by law, no exclusion for punitive damages may be included in any policy.

15.6.2 Licensee agrees to waive its right of recovery against Licensor for all claims and suits

15.6 Other Requirements:

against Licensor. In addition, Licensee's insurers, through the terms of the policy or policy endorsement, waive their right of subrogation against Licensor for all claims and suits. Licensee further waives its right of recovery, and its insurers also waive their right of subrogation against Licensor for loss of Licensee's owned or leased property or property under Licensee's care, custody, or control.

15.6.3 Allocated Loss Expense, including but not limited to defense costs and expenses, will be in addition to all policy limits for coverage under the insurance requirements.

15.6.4 Licensee is not allowed to self-insure without the prior written consent of Licensor. If Licensor allows Licensee to self-insure, Licensee shall directly cover any self-insured retention or other financial responsibility for claims in lieu of insurance. Any and all Licensor liabilities that would otherwise be covered by Licensee's insurance in

accordance with the provisions of this agreement, will be covered as if Licensee elected not to include a self-insured retention or other financial responsibility for claims.

15.6.5 Prior to entering the Premises or commencing any work related to the installation or subsequent maintenance of the Pipeline, Licensee shall furnish to Licensor an acceptable certificate(s) of insurance from an authorized representative evidencing the required coverage(s), endorsements, and amendments.

15.6.6 Licensee shall notify BNSF in writing at least 30 days prior to any cancellation, non-renewal, substitution or material alteration of any insurance requirement.

15.6.7 Any insurance policy shall be written by a reputable insurance company acceptable to Licensor or with a current Best's Guide Rating of A- and Class VII or better, and authorized to do business in the state(s) in which the service is to be provided.

15.6.8 If the coverage provided by any of the insurance policies required by this agreement is purchased on a "claims made" basis, Licensee hereby agrees to maintain coverage in force for a minimum of three years after expiration, cancellation or termination of this agreement.

15.6.9 Licensee agrees to provide evidence to Licensor that it has the required coverage in place at least annually or in the event of a renewal or material change of coverage

15.6.10 Licensee represents that this License has been thoroughly reviewed by Licensee's insurance agent(s)/broker(s), and that Licensee has instructed them to procure the insurance coverage required by this License.

15.6.11 Not more frequently than once every five years, Licensor may, at its discretion, reasonably modify the insurance requirements to reflect the then-current risk management practices in the railroad industry and underwriting practices in the insurance industry.

15.6.12 If Licensee will subcontract any portion of the operation, Licensee shall require that the subcontractor provide and maintain insurance coverage(s) as set forth herein, naming Licensor as an additional insured. In addition, Licensee shall require that the subcontractor shall release, defend and indemnify Licensee to the same extent and under the same terms and conditions as Licensee is required to release, defend and indemnify Licensor under this agreement.

15.6.13 Failure to provide evidence as required by this section shall entitle, but not require, Licensor to terminate this License immediately. Acceptance of a certificate that does not comply with this section shall not operate as a waiver of Licensee's obligations hereunder.

15.6.14 The fact that Licensee obtains insurance (including, without limitation, self-insurance) shall not release or diminish Licensee’s liabilities or obligations including, without limitation, the liabilities and obligations under the indemnity provisions of the License. Damages recoverable by Licensor shall not be limited by the amount of the required insurance coverage.

15.6.15 In the event of a claim or lawsuit involving BNSF arising out of this Agreement, Licensee will make the policy covering such claims or lawsuits available to BNSF.

15.6.16 If Licensee maintains broader coverage and/or higher limits than the minimum requirements in this Agreement, BNSF requires and shall be entitled to the broader coverage and/or the higher limits. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to BNSF.

15.6.17 These insurance provisions are intended to be a separate and distinct obligation on the part of the Licensee. Therefore, these provisions shall be enforceable and Licensee shall be bound thereby regardless of whether or not indemnity provisions are determined to be enforceable in the jurisdiction in which the work or services are performed under this License.

15.6.18 For purposes of this **Section 15**, Licensor shall mean "Burlington Northern Santa Fe, LLC", "BNSF Railway Company" and the subsidiaries, successors, assigns and affiliates of each.

COMPLIANCE WITH LAWS, REGULATIONS, AND ENVIRONMENTAL MATTERS

16. Compliance with Laws, Rules, and Regulations.

16.1 Licensee shall observe and comply with any and all applicable federal, state, local, and tribal laws, statutes, regulations, ordinances, orders, covenants, restrictions, or decisions of any court of competent jurisdiction ("**Legal Requirements**") relating to the construction, maintenance, and use of the Pipeline and the use of the Premises.

16.2 Prior to entering the Premises, Licensee shall and shall cause its contractor(s) to comply with all of Licensor's applicable safety rules and regulations. Licensee must ensure that each of its employees, contractors, agents or invitees entering upon the Premises completes the safety orientation program at the Website "www.BNSFcontractor.com" (the "**Safety Orientation**") within one year prior to entering upon the Premises. Additionally, Licensee must ensure that each and every employee of Licensee, its contractors, agents and invitees possess a card certifying completion of the Safety Orientation prior to entering upon the Premises. Licensee must renew (and ensure that its contractors, agents or invitees, as applicable, renew) the Safety Orientation annually.

16.3 Licensee shall obtain on or before the date it or its contractor enters the Premises, any and all additional rights-of way, easements, licenses and other agreements relating to the grant of rights and interests in and/or access to the Premises (collectively, the "**Rights**") and such other rights, licenses, permits, authorizations, and approvals (including without limitation, any necessary local, state, federal or tribal authorizations and environmental permits) that are necessary in order to permit Licensee to construct, maintain, own and operate the Pipeline and otherwise to perform its obligations hereunder in accordance with the terms and conditions hereof.

16.4 Licensee shall either require that the initial stated term of each such Rights be for a period that does not expire, in accordance with its ordinary terms, prior to the last day of the term of this License or, if the initial stated term of any such Right expires in accordance with its ordinary terms on a date earlier than the last day of the term of this License, Licensee shall, at its cost, exercise any renewal rights thereunder, or otherwise acquire such extensions, additions and/or replacements as may be necessary, in order to cause the stated term thereof to be continued until a date that is not earlier than the last day of the term of this License.

16.5 Upon the expiration or termination of any Right that is necessary in order for Licensee to own, operate or use the Pipeline in accordance with the terms and conditions of this License, this License thereby shall automatically expire upon such expiration or termination of the Right.

17. Environmental.

17.1 Licensee shall strictly comply with Environmental Laws (as defined below). Licensee shall not maintain a treatment, storage, transfer or disposal facility, or underground storage tank, as defined by Environmental Laws on the Premises. Licensee shall not release or suffer the release of oil or Hazardous Materials (as defined below) on or about the Premises.

17.2 Except as specifically set forth in Section 4 of this License, Licensee covenants that it will not handle or transport Hazardous Materials through the Pipeline or on Licensor's property. Upon

request by Licensor, Licensee agrees to furnish Licensor with proof, satisfactory to Licensor, that Licensee is in compliance with the provisions of this **Section 17.2**.

17.3 Licensee shall give Licensor immediate notice to Licensor's Resource Operations Center at (800) 832-5452 of any known (i) release of Hazardous Materials on, from, or affecting the Premises, (ii) violation of Environmental Laws, or (iii) inspection or inquiry by governmental authorities charged with enforcing Environmental Laws with respect to Licensee's use of the Premises. Licensee shall use its best efforts to immediately respond to any release on, from, or affecting the Premises. Licensee also shall give Licensor prompt notice of all measures undertaken on behalf of Licensee to investigate, remediate, respond to or otherwise cure such release or violation.

17.4 If Licensor has notice from Licensee or otherwise of a release or violation of Environmental Laws arising in any way with respect to the Pipeline which occurred or may occur during the term of this License, Licensor may require Licensee, at Licensee's sole risk and expense, to take timely measures to investigate, remediate, respond to or otherwise cure such release or violation affecting the Premises or Licensor's right-of-way.

17.5 Licensee shall immediately report to Licensor's Resource Operations Center at (800) 832-5452 any conditions or activities upon the Premises known to Licensee which create a risk of harm to persons, property or the environment and shall take all reasonable actions necessary to prevent injury to persons, property, or the environment arising out of such conditions or activities; provided, however, that Licensee's reporting to Licensor shall not relieve Licensee of any obligation whatsoever imposed on it by this License. Licensee shall promptly respond to Licensor's request for information regarding said conditions or activities.

17.6 During the term of this License, Licensor may, at Licensor's option, require Licensee to conduct an environmental audit, including but not limited to sampling, of the Premises through an environmental consulting engineer acceptable to Licensor, at Licensee's sole cost and expense, to determine if any noncompliance or environmental damage to the Premises has occurred during occupancy thereof by Licensee. The audit shall be conducted to Licensor's satisfaction and a copy of the audit report shall promptly be provided to Licensor for its review. Licensee shall pay all expenses for any remedial or corrective action that may be required as a result of said audit to correct any noncompliance or environmental damage, and Licensee shall diligently pursue and complete all necessary work prior to termination of this License. Licensee's obligations under this Section 17.6 shall survive termination of this License.

17.7 Notwithstanding anything in this Section 17, the parties agree that Licensor has no duty or obligation to monitor Licensee's use of the Premises to determine Licensee's compliance with Environmental Laws, it being solely Licensee's responsibility to ensure that Licensee's use of the Premises is compliant. Neither the exercise nor the failure by Licensor to exercise any rights granted in this Section will alter the liability allocation provided by this License.

17.8 "**Environmental Law(s)**" shall mean any federal, state, local, or tribal law, statute, ordinance, code, rule, regulation, policy, common law, license, authorization, decision, order, or injunction which pertains to health, safety, any Hazardous Material, or the environment (including but not limited to ground, air, water, or noise pollution or contamination, and underground or above-ground tanks) and shall include, without limitation, CERCLA 42 U.S.C. §9601 et seq.; the Resource Conservation and Recovery Act, 42 U.S.C. §6901 et seq.; the Hazardous Materials Transportation Act, 49 U.S.C. §5101 et seq.; the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq.; the Clean Air Act, 42 U.S.C. §7401 et seq.; the Toxic Substances Control Act, 15 U.S.C. §2601 et seq.; the Safe Drinking Water Act, 42 U.S.C. §300f et seq.; the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11001 et seq.; the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. 136 to 136y; the Oil Pollution Act, 33 U.S.C. 2701 et seq.; and the Occupational Safety and Health Act, 29 U.S.C. 651 et seq.; all as have been amended from time to time, and any other federal, state, local, or tribal environmental requirements, together with all rules, regulations, orders, and decrees now or hereafter promulgated under any of the foregoing, as any of the foregoing now exist or may be changed or amended or come into effect in the future.

17.9 "**Hazardous Material(s)**" shall include but shall not be limited to any substance, material, or waste that is regulated by any Environmental Law or otherwise regulated by any federal, state, local, or tribal governmental authority because of toxic, flammable, explosive, corrosive, reactive, radioactive or other properties that may be hazardous to human health or the environment, including without limitation asbestos and asbestos-containing materials, radon, petroleum and petroleum products, urea formaldehyde foam insulation, methane, lead-based paint, polychlorinated biphenyl compounds, hydrocarbons or like substances and their additives or constituents, pesticides, agricultural chemicals, and any other special, toxic, or hazardous (i) substances, (ii) materials, or (iii) wastes of any kind, including without limitation those now or hereafter defined, determined, or identified as "hazardous chemicals", "hazardous substances," "hazardous materials," "toxic substances," or "hazardous wastes" in any Environmental Law.

[*USE §§ 17.10-17.12 ONLY FOR PIPELINES CARRYING CONTROLLED USE COMMODITY(IES) AND THE ECP TEMPLATE SHOULD BE SENT TO APPLICANT *******

17.10 In addition to and not in limitation of the provisions of **Sections 17.3 and 17.5** above, any monitoring observations, data or results indicative of potential harm to persons, property or the environment shall be reported by Licensee to Licensor in writing no later than forty-eight (48) hours of the development of such observations, data or results, and Licensee shall timely update Licensor as to Licensee's subsequent investigation. Licensee shall promptly provide Licensor with copies of any submissions or correspondence to or from federal, state, local, or tribal government agencies related to any matters covered by Sections **17.3, 17.5, or 17.9**.

17.11 Licensee shall, as minimum standards that may be exceeded, design, construct and operate the Pipeline in accordance with all Legal Requirements and with the most current standards set forth by industry groups and/or associations such as the American Society of Mechanical Engineers (ASME), the American National Standards Institute (ANSI) and the American Petroleum Institute (API) ("**Standards**"). In addition to meeting or exceeding the minimum Standards and Legal Requirements referenced in this **Section 17.11**, the Pipeline meet all Legal Requirements for rupture prevention and detection. Licensee shall conduct routine and condition-based monitoring consistent with Licensee's Environmental Compliance Plan, as described in **Section 17.12** below.

17.12 Licensee shall comply with its Environmental Compliance Plan ("**ECP**"), which ECP shall be prepared by Licensee in connection with Licensee's operation and maintenance of the Pipeline on the Premises. The ECP shall meet or exceed Legal Requirements and Standards for the safe operation of the Pipeline and shall be updated at least annually and more frequently as necessary to ensure and demonstrate ECP compliance with such Legal Requirements and Standards. Each update to the ECP shall be promptly submitted to Licensor and thereby become a part of this License. Licensor may review any ECP or any update thereof, and provide further requirements or comments in connection therewith, all provided that, notwithstanding Licensor's review and/or acceptance of any ECP or update thereof, Licensee shall remain solely responsible for the safe operation of the Pipeline on the Premises at all times, and the liability of Licensee hereunder shall not be altered or affected in any way. In addition to the foregoing requirements, the ECP shall:

17.12.1 identify measures to be implemented by Licensee to identify, prevent and mitigate incidents which may potentially create a risk of harm to persons, property or the environment during construction, operation and removal of the Pipeline, and during restoration of the Premises and any impacted property upon termination of the License;

17.12.2 identify routine and condition-based monitoring to be conducted by Licensee which will ensure that the integrity and functionality of the Pipeline is maintained and that the risk for potential harm to persons, property and the environment is mitigated;

17.12.3 identify remedial actions to be undertaken upon the development of observations, data or results indicative of potential harm to persons, property, or the environment;

17.12.4 specify Licensee's plans to make the Pipeline and ancillary structures free of any materials and products and flushed clean;

17.12.5 specify Licensee's plans to abandon or remove the Pipeline and all ancillary structures and to restore the Premises upon termination of the License; and

17.11.6 specify Licensee's plans to investigate, confirm, and, if necessary, remediate impacts to surface or subsurface soil associated with Licensee's Pipeline, which investigation and remediation shall be in full compliance with Legal Requirements and Environmental Laws.]

DISCLAIMER OF WARRANTIES

18. No Warranties.

18.1 **LICENSOR'S DUTIES AND WARRANTIES ARE LIMITED TO THOSE EXPRESSLY STATED IN THIS LICENSE AND SHALL NOT INCLUDE ANY IMPLIED DUTIES OR IMPLIED WARRANTIES, NOW OR IN THE FUTURE. NO REPRESENTATIONS OR WARRANTIES HAVE BEEN MADE BY LICENSOR OTHER THAN THOSE CONTAINED IN THIS LICENSE. LICENSEE HEREBY WAIVES ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE PREMISES OR WHICH MAY EXIST BY OPERATION OF LAW OR IN EQUITY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, HABITABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

18.2 **LICENSOR MAKES NO WARRANTY, REPRESENTATION OR CONDITION OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING (A) THE SCOPE OF THE LICENSE OR OTHER RIGHTS GRANTED HEREUNDER TO LICENSEE OR (B) WHETHER OR NOT LICENSEE'S CONSTRUCTION, MAINTENANCE, OWNERSHIP, USE OR OPERATION OF THE PIPELINE WILL VIOLATE OR INFRINGE UPON THE RIGHTS, INTERESTS AND ESTATES OF THIRD PARTIES, INCLUDING, WITHOUT LIMITATION, ANY LEASES, USE RIGHTS, EASEMENTS AND LIENS OF ANY THIRD PARTY.**

19. Disclaimer of Warranty for Quiet Enjoyment. **LICENSOR DOES NOT WARRANT ITS TITLE TO THE PREMISES NOR UNDERTAKE TO DEFEND LICENSEE IN THE PEACEABLE POSSESSION OR USE THEREOF. NO COVENANT OF QUIET ENJOYMENT IS MADE.**

20. Eviction at Risk of Licensee. In case of the eviction of Licensee by anyone owning, claiming title to, or claiming any interest in the Premises, or by the abandonment by Licensor of the affected rail corridor, Licensor shall not be liable (i) to refund Licensee any compensation paid hereunder, except for the pro-rata part of any recurring charge paid in advance, or (ii) for any damages or costs Licensee sustains in connection with the eviction.

LIENS AND TAXES

21. Liens and Charges. Licensee shall promptly pay and discharge any and all liens arising out of any construction, alterations or repairs done, suffered or permitted to be done by Licensee on the Premises. Licensor is hereby authorized to post any notices or take any other action upon or with respect to the Premises that is or may be permitted by law to prevent the attachment of any such liens to the Premises; provided, however, that failure of Licensor to take any such action shall not relieve Licensee of any obligation or liability under this **Section 21** or any other Section of this License.

22. Taxes. Licensee shall pay when due any taxes, assessments or other charges (collectively, "**Taxes**") levied or assessed by any governmental or quasi-governmental body upon the Pipeline or any other improvements constructed or installed on the Premises by or for Licensee (collectively, the "**Improvements**") or any Taxes levied or assessed against Licensor or the Premises that are attributable to the Improvements.

DEFAULT, TERMINATION, AND SURRENDER

23. Default and Termination. In addition to and not in limitation of Licensor's right to terminate for failure to provide evidence of insurance as required pursuant to the terms of **Section 15**, the following events are also deemed to be events of default pursuant to which Licensor has the right to terminate as set forth below:

23.1 If default shall be made in any of Licensee's covenants, agreements, or obligations contained in this License and Licensee fails to cure said default within thirty (30) days after written notice is provided to Licensee by Licensor, or in case of any assignment or transfer of this License in violation of **Section 26** below, Licensor may, at its option, terminate this License by serving five (5) days' notice in writing upon Licensee. Notwithstanding the foregoing, Licensor shall have the right to terminate this License immediately if Licensee fails to provide evidence of insurance as required in **Section 15**.

23.2 Should Licensee not comply fully with the obligations of **Section 17** regarding the handling or transporting of Hazardous Materials, notwithstanding anything contained in any other provision of this License, Licensor may, at its option, terminate this License by serving five (5) days' notice in writing upon Licensee.

23.3 Any waiver by Licensor of any default or defaults shall not constitute a waiver of the right to terminate this License for any subsequent default or defaults, nor shall any such waiver in any way affect Licensor's ability to enforce any Section of this License. The remedies set forth in this **Section 23** shall be in addition to, and not in limitation of, any other remedies that Licensor may have at law or in equity.

23.4 In addition to and not in limitation of Licensor's rights to terminate this License for failure to provide evidence of insurance or occurrence of defaults as described above, this License may be terminated by either party, at any time, by serving thirty (30) days' written notice of termination upon the other party. Such termination shall not release either party hereto from any liability or obligation under the License, whether of indemnity or otherwise, resulting from any acts, omissions or events happening prior to the date of termination or thereafter in case by the terms of the License it is provided that anything shall or may be done after termination hereof.

24. Surrender of the Premises.

24.1 On or before expiration or termination of this License for any reason, Licensee shall, at its sole cost and expense:

24.1.1 if so directed by Licensor in writing, remove the Improvements, the Pipeline and all appurtenances thereto, or, at the sole discretion of Licensor, fill and cap or otherwise appropriately decommission the Pipeline with a method satisfactory to Licensor;

24.1.2 report and restore any damage to the Premises or Licensor's other property arising from, growing out of, or connected with Licensee's use of the Premises;

24.1.3 remedy any unsafe conditions on the Premises created or aggravated by Licensee; and

24.1.4 leave the Premises in substantially the condition which existed as of the Effective Date, or as otherwise agreed to by Licensor.

24.2 Upon any expiration or termination of this License, if Licensee fails to surrender the Premises to Licensor or if Licensee fails to complete its obligations under **Section 24.1** above (the "**Restoration Obligations**"), Licensee shall have a limited license to enter upon the Premises solely to the extent necessary for Licensee to complete the Restoration Obligations, and all liabilities and obligations of Licensee hereunder shall continue in effect until the Premises are surrendered and the Restoration Obligations are completed. Neither termination nor expiration shall release Licensee from any liability or obligation under this License, whether of indemnity or

otherwise, resulting from any acts, omissions or events happening prior to the date of termination, or, if later, the date when Licensee surrenders the Premises and all of the Restoration Obligations are completed.

24.3 If Licensee fails to complete the Restoration Obligations within thirty (30) days after the date of such termination of its tenancy, then Licensor may, at its election, either: (i) remove the Pipeline and the other Improvements or otherwise restore the Premises, and in such event Licensee shall, within thirty (30) days after receipt of bill therefor, reimburse Licensor for cost incurred, (ii) upon written notice to Licensee, take and hold the Pipeline and the other Improvements and personal property as its sole property, without payment or obligation to Licensee therefor, or (iii) specifically enforce Licensee's obligation to restore and/or pursue any remedy at law or in equity against Licensee for failure to so restore. Further, if Licensor has consented to the Pipeline and the other Improvements remaining on the Premises following termination, Licensee shall, upon request by Licensor, provide a bill of sale in a form acceptable to Licensor conveying the Pipeline and the other Improvements to Licensor for no additional consideration.

MISCELLANEOUS

25. Successors and Assigns. All provisions contained in this License shall be binding upon, inure to the benefit of, and be enforceable by the respective successors and assigns of Licensor and Licensee to the same extent as if each such successor and assign was named a party to this License.

26. Assignment.

26.1 Licensee may not sell, assign, transfer, or hypothecate this License or any right, obligation, or interest herein (either voluntarily or by operation of law, merger, or otherwise) without the prior written consent of Licensor, which consent may not be unreasonably withheld or delayed by Licensor. Any attempted assignment by Licensee in violation of this **Section 26** shall be a breach of this License and, in addition, shall be voidable by Licensor in its sole and absolute discretion.

26.2 For purposes of this **Section 26**, the word "assign" shall include without limitation (a) any sale of the equity interests of Licensee following which the equity interest holders of Licensee immediately prior to such sale own, directly or indirectly, less than 50% of the combined voting power of the outstanding voting equity interests of Licensee, (b) any sale of all or substantially all of the assets of (i) Licensee and (ii) to the extent such entities exist, Licensee's parent and subsidiaries, taken as a whole, or (c) any reorganization, recapitalization, merger or consolidation involving Licensee. Notwithstanding the foregoing, any reorganization, recapitalization, merger or consolidation following which the equity interest holders of Licensee immediately prior to such reorganization, recapitalization, merger or consolidation own, directly or indirectly, at least 50% of the combined voting power of the outstanding voting equity interests of Licensee or any successor thereto or the entity resulting from such reorganization, recapitalization, merger or consolidation shall not be deemed an assignment. THIS LICENSE SHALL NOT RUN WITH THE LAND WITHOUT THE EXPRESS WRITTEN CONSENT OF LICENSOR, SUCH CONSENT TO BE IN LICENSOR'S SOLE DISCRETION.

26.3 Notwithstanding the provisions of **Section 26.1** above or anything contained in this License to the contrary, if Licensee sells, assigns, transfers, or hypothecates this License or any interest herein in contravention of the provisions of this License (a "**Purported Assignment**") to another party (a "**Purported Transferee**"), the Purported Transferee's enjoyment of the rights and privileges granted under this License shall be deemed to be the Purported Transferee's agreement to be bound by all of the terms and provisions of this License, including but not limited to the obligation to comply with the provisions of **Section 15** above concerning insurance requirements. In addition to and not in limitation of the foregoing, Licensee, for itself, its successors and assigns, shall indemnify, defend and hold harmless Licensor for all Liabilities of any nature, kind or description of any person or entity directly or indirectly arising out of, resulting from or related to (in whole or in part) a Purported Assignment. The provisions of this **Section 26.3** shall survive the expiration or earlier termination of this License.

26.4 Licensor shall have the right to transfer and assign, in whole or in part, all of its rights and obligations under this License, and upon any such transfer or assignment, Licensor shall be released from any further obligations hereunder, and Licensee agrees to look solely to the successor in interest of Licensor for the performance of such obligations.

27. Notices. Any notice, invoice, or other writing required or permitted to be given hereunder by one party to the other shall be in writing and the same shall be given and shall be deemed to have been served and given if (i) placed in the United States mail, certified, return receipt requested, or (ii) deposited into the custody of a nationally recognized overnight delivery service, addressed to the party to be notified at the address for such party specified below, or to such other address as the party to be notified may designate by giving the other party no less than thirty (30) days' advance written notice of such change in address.

If to Licensor: Jones Lang LaSalle Brokerage, Inc.
2650 Lou Menk Drive, MOB1
Fort Worth, TX 76131
Attn: Permits/Licenses

with a copy to: BNSF Railway Company
2650 Lou Menk Dr.
Fort Worth, TX 76131
Attn: Senior Manager Real Estate

If to Licensee: «Company»
«Company_Address_1»
«Company_Address_2»
Attn: _____

28. Survival. Neither termination nor expiration will release either party from any liability or obligation under this License, whether of indemnity or otherwise, resulting from any acts, omissions or events happening prior to the date of termination or expiration, or, if later, the date when the Pipeline and the other Improvements are removed and the Restoration Obligations are completed in accordance with the terms hereof.

29. Recordation. It is understood and agreed that this License shall not be placed or allowed to be placed on public record.

30. Applicable Law. All questions concerning the interpretation or application of provisions of this License shall be decided according to the substantive laws of the State of Texas without regard to conflicts of law provisions.

31. Severability. To the maximum extent possible, each provision of this License shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this License shall be prohibited by, or held to be invalid under, applicable law, such provision shall be ineffective solely to the extent of such prohibition or invalidity, and this shall not invalidate the remainder of such provision or any other provision of this License.

32. Integration. This License is the full and complete agreement between Licensor and Licensee with respect to all matters relating to Licensee's use of the Premises, and supersedes any and all other agreements between the parties hereto relating to Licensee's use of the Premises as described herein. However, nothing herein is intended to terminate any surviving obligation of Licensee or Licensee's obligation to defend and hold Licensor harmless in any prior written agreement between the parties.

33. Joint and Several Liability. If Licensee consists of two or more parties, all the covenants and agreements of Licensee herein contained shall be the joint and several covenants and agreements of such parties.

34. Waiver. The waiver by Licensor of the breach of any provision herein by Licensee shall in no way impair the right of Licensor to enforce that provision for any subsequent breach thereof.

35. Interpretation.

35.1 This License shall be interpreted in a neutral manner, and not more strongly for or against any party based upon the source of the draftsmanship; both parties hereby agree that this License shall not be subject to the principle that a contract would be construed against the party which drafted the same. Article titles, headings to sections and paragraphs and the table of contents (if any) are inserted for convenience of reference only and are not intended to be a part or to affect the meaning or interpretation hereof. The exhibit or exhibits referred to herein shall be construed with and as an integral part of this License to the same extent as if they were set forth verbatim herein.

35.2 As used herein, "include", "includes" and "including" are deemed to be followed by "without limitation" whether or not they are in fact followed by such words or words of like import; "writing", "written" and comparable terms refer to printing, typing, lithography and other means of reproducing words in a visible form; references to any person are also to that person's successors and permitted assigns; "hereof", "herein", "hereunder" and comparable terms refer to the entirety hereof and not to any particular article, section, or other subdivision hereof or attachment hereto; references to any gender include references to the masculine or feminine as the context requires; references to the plural include the singular and vice versa; and references to this License or other documents are as amended, modified or supplemented from time to time.

36. Counterparts. This License may be executed in multiple counterparts, each of which shall, for all purposes, be deemed an original but which together shall constitute one and the same instrument, and the signature pages from any counterpart may be appended to any other counterpart to assemble fully executed documents, and counterparts of this License may also be exchanged electronically and any electronic version of any party's signature shall be deemed to be an original signature for all purposes.

37. Licensor's Representative. Jones Lang LaSalle Brokerage, Inc. is acting as representative for BNSF Railway Company.

END OF PAGE – SIGNATURE PAGE FOLLOWS

This License has been duly executed by the parties hereto as of the Effective Date.

LICENSOR:

BNSF Railway Company, a Delaware corporation

By: Jones Lang LaSalle Brokerage, Inc.
2650 Lou Menk Drive, MOB1
Fort Worth, TX 76131

By: _____
Shane Krueger
Vice President Permits and Special Projects

LICENSEE:

«Company», a(n) «State_of_Incorporation» «Type_of_corporation»

By: _____

Title: _____