

CONTRACT DOCUMENTS AND CONTRACT SPECIFICATIONS

Town Resaca Watershed Project

BPUB Bid #: B012-24

TCEQ Contract #: 582-20-11819

BROWNSVILLE, TX



TBPELS Engineering Firm #312
TEL (956) 303-0110
1075 Paredes Line Road, Suite B
Brownsville, TX 78521
AVO: 42947.001

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**LEGAL NOTICE
AND
INVITATION TO BID
BID #B012-24**

Sealed bids will be received by the PUBLIC UTILITIES BOARD of the City of Brownsville, Texas ("BPUB", "OWNER"), at the PUB Purchasing Department office; 1155 FM511, Olmito, TX 78575 **until 2:00 PM, local prevailing time, on November 22, 2023** for the Project described in the Contract Documents and Specifications entitled:

TOWN RESACA WATERSHED PROJECT

Bids received after this time will not be considered.

Bids will be publicly opened and read aloud on November 22, 2023, at 2:15 PM. Bidders can request a copy of the bid tabulation by emailing dsolitaire@brownsville-pub.com. Vendors can call in at 2:15 PM, November 22, 2023, to (956) 214-6020 to listen to the bid opening.

The Work in general includes, but is not limited to:

- 1) Remove and Replace 2 existing weirs as well as install 290 LF of Bulkhead, 108 LF of communication lines, 113 LF of PVC Conduit for the southern weir and 125 LF of communication lines, 201 LF of PVC Conduit for the northern weir. Install 12 Stormwater Treatment Units (Diameter Size Varies) and 2 Bypass Diversion Structures (Size Varies). Additionally, remove 12 LF portion from 15" RCP and replace with 12 LF of 12" DR-25 PVC and a 12" Gate Valve & Box centered on said pipe. This project also includes brick pavers, concrete sidewalk, landscaping, and other appurtenances.

Copies of the Contract Documents and Specifications may be obtained at the following website https://www.brownsville-pub.com/rfp_status/open/. A non-mandatory pre-bid conference shall be held at the BPUB Purchasing Department via conference call (956-214-6020) at 2:00 PM, local prevailing time, on November 8, 2023.

Each bid, in duplicate, shall be enclosed in a sealed envelope and shall be plainly marked on the outside of the envelope: **"BID B012-24 TOWN RESACA WATERSHED PROJECT, NOVEMBER 22, 2023, 2:00 PM"**. This envelope shall be addressed to Diane Solitaire; Brownsville Public Utilities Board; Purchasing Department; 1155 FM 511, Olmito, Texas 78575.

Each bid shall constitute an offer to the Board, as outlined therein, and shall be irrevocable for at least ninety (90) calendar days after the time announced for the opening thereof.

Each bid shall be accompanied by a Certified or Cashier's check payable to the order of the Brownsville Public Utilities Board, City of Brownsville, Texas for a sum not less than five (5%) percent of the total amount bid. In lieu of a check, a Bid Bond with a Corporate Surety licensed to do business in the State of Texas, may be submitted in an amount not less than five (5%) percent of the total amount bid conditioned that the BIDDER will pay the BPUB, as mutually agreed to

liquidated damages, and not as a penalty, the amount specified in the Bond, unless he enters into a BPUB contract in accordance with his bid. BIDDER is required to execute a contract and furnish a Performance Bond, Payment Bond and a Certificate of Insurance. If the BIDDER fails to execute the contract and to furnish satisfactory Performance and Payment Bonds and Insurance Certificates within ten (10) calendar days from the date on which he is notified that his bid has been accepted, the amount of his check or bid bond shall be forfeited to the BPUB as mutually agreed to liquidated damages, and not as a penalty. **No bid will be considered if the Bid Security is not submitted.**

The BPUB will not be responsible in the event that the U.S. Postal Service or any other courier system fails to deliver the sealed bids to the Brownsville Public Utilities Board, Purchasing Office by the given deadline above. **No bids will be accepted via facsimile or electronic transmission.**

The BPUB specifically reserves the right to reject any or all bids, to waive irregularities or informalities in any or all bids and to accept any bid which is deemed to be in the best interest of the Board or to reject the bids. The award will be made to the responsive and responsible bidder submitting the lowest bid as determined by the BPUB.

Equal Opportunity in Employment - All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. Bidders will be required to comply with the President's Executive Order No. 11246, as amended by Executive Order 11375, and as supplemented in Department of Labor regulations 41 CFR, Part 60. The requirements for bidders and contractors under this Order are explained in the Specifications.

Diane Solitaire
Purchasing Department
(956) 983-6366

INSTRUCTIONS TO BIDDERS
Please submit this page upon receipt
Acknowledgment Form
TOWN RESACA WATERSHED PROJECT
BID #B012-24

For any clarifications, please contact Diane Solitaire at the Brownsville Public Utilities Board, Purchasing Department at (956) 983-6366 or e-mail: dsolitaire@brownsville-pub.com

Please e-mail this page upon receipt of the bid package or legal notice. If you only received the legal notice and you want the bid package mailed, please provide a method of shipment with account number in the space designated below.

Check one:

Yes, I will be able to send a bid; obtained bid package from website.

Yes, I will be able to send a bid; please email the bid package.

Email: _____

Yes, I will be able to send a bid; please mail the bid package using the carrier & account number listed below:

Carrier: _____

Account: _____

No, I will not be able to send a bid for the following reason:

If you are unable to send your bid, kindly indicate your reason for “No bid” above and return this form **via email to dsolitaire@brownsville-pub.com**. This will ensure you remain active on our vendor list.

Date _____

Company: _____

Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____

Email: _____

Special Instructions

Contract Information

- **Interpretation**

Questions concerning terms, conditions, and technical specifications should be directed to:

Diane Solitaire, Purchasing and Materials Manager
email: dsolitaire@brownsville-pub.com

Tentative Time Line

1. October 21, 2023 through November 22, 2023 – Vendor bid preparation.
2. November 22, 2023 at 2:00 PM - **Vendor must submit bid, in duplicate, sealed in an envelope to:**

Diane Solitaire, Purchasing and Materials Manager
1155 FM 511
Olmiteo, TX 78575

Bid #B012-24 – **TOWN RESACA WATERSHED PROJECT**

Due NOVEMBER 22, 2023 at 2:15 PM

The above noted information must be included on bid envelope and on any carrier's envelope/package. The Brownsville Public Utilities Board will not be held responsible for missing, lost or late mail. Brownsville Public Utilities Board will not accept electronic transmissions or facsimiles of sealed bids.

3. November 8, 2023 – Pre-Bid Conference at 2:00 PM
4. November 22, 2023 - Open bids at 2:15 PM
5. November 27, 2023 - Evaluate bids
6. November 27, 2023 - Deadline to provide final recommendations for Board approval.
7. December 11, 2023 - Send recommendation to Utilities Board for formal and possible Contract award approval.

- **“Or Equal”**

Brand name and/or manufacturer's references used in this Request are descriptive – not restrictive – they are intended to generally indicate type and quality desired. Brands of like nature and quality will generally be considered. If bidding on other than referenced Specifications, please provide complete descriptive information of said material/equipment article. BPUB also reserves the legal right to specify a “sole source” component if such component is critical for integration to a larger

BPUB assembly and alternative manufactured items will not meet the design and/or performance needs of the BPUB, in BPUB's sole discretion.

- **Pricing**

Bid unit prices on BPUB estimated quantities specified, extend and show total. In case of errors in extension, unit prices expressed in written words and not numerals, shall govern. Prices shall remain firm throughout the Contract.

All fields (UNIT PRICE & TOTAL PRICE) in the Bid Schedule must be filled in. The data must be complete to identify any bidding brand called for specifically.

Failure to submit any of the above information with the sealed bid may disqualify bid as non-responsive.

- **Contractor Representative**

The successful contractor agrees to send a personal representative with binding authority for the company to the Brownsville Public Utilities Board, upon request, to make any minor clarifications or adjustments and/or assist with coordination of all transactions as needed to allow Contract entry.

- **Quality of Products**

All material and equipment items specified must be new, in first class condition, including containers suitable for shipment and storage. No substitutions in standard grades or lesser quality will be accepted.

- **Determining Factors for Award**

1. Price
2. Responsibility of contractor to perform the intended work and responsiveness to the bid request.
3. Compliance with requirements of the Technical Specifications
4. Quality of performance on previous work on similar contracts
5. Recent successful completion of similar projects
6. BPUB financial and legal responsibility evaluations of any identified teaming arrangements involving significant joint ventures, sub-contractors and suppliers
7. Safety record will be considered when determining the responsibility of the bidder

- **Contract with Vendor/Entity Indebted to BPUB**

It is a policy of the BPUB to refuse to enter into a contract or other transaction with an individual, sole proprietorship, joint venture, Limited Liability Company or other entity indebted to BPUB.

- **Vendor ACH (Direct Deposit) Services**

The BPUB has implemented a payment service for vendors/contractors by depositing the contract payment directly to the contractor's/vendor's bank account. Successful vendor(s)/contractors will

be required to receive payments directly through Automated Clearing House (ACH) in lieu of a paper check. **The awarded vendor must agree to receive payments via ACH (Direct Deposit).**

- **Tax Identification Number (TIN)**

In accordance with IRS Publication 515, aW9 form, or a W8 form in cases of a foreign vendor, will be required of all vendors doing business with the Brownsville PUB. If a W9 or W8 form is not made available to Brownsville PUB, the first payment will be subject to income tax withholding at a rate of 28% or 30% depending on the U.S. status and the source of income as per IRS Publication 515. **The W9 or W8 form must be included with bid response.** Attached are sample forms.

- **Taxes**

The City of Brownsville and its Brownsville Public Utilities Board are exempt from Federal Excise Tax, State Tax and local sales Taxes. Do not include any taxes in the bid proposal. If it is later determined that tax was included in the bid it will not be included in the tabulation or any awards. Tax exemption certificates will be furnished by BPUB upon request.

- **Signing of Bid**

Failure to sign bid will disqualify it. Person signing bid should show title or legal authority to bind their firm to a Contract.

- **EEOC Guidelines**

During the performance of this Contract, the contractor agrees not to discriminate against any employee or applicant for employment because of race, national origin, age, religion, gender, sexual preference, marital or veteran status, or physically challenging condition.

- **Living Wage Statement (RESERVED)**

On April 16, 2007, the BPUB Board of Directors approved a local “living wage” policy that requires all Contractors and Subcontractors performing 100% Non-Federally funded Work for the BPUB, to pay a minimum wage rate of \$8.00/hour. The BPUB requires that all Contractors and Subcontractors comply with this policy. Otherwise, the BPUB adopts the Federal Department of Labor Wage scales for Cameron County on 100% Non-Federally funded projects as specified later herein in the Supplementary Conditions.

- **Contract and Purchase Order**

The services shall be completed in a timely manner as specified in Specifications. A Contract for the services will be placed into effect by means of a purchase order and/or Construction Agreement issued by the Brownsville Public Utilities Board after tabulation and final Contract approval by the Board.

- **Brownsville Public Utilities Board Rights**

1. If only one or no bid is received by "submission date", the BPUB has the right to reject, re-bid, accept and/or extend the bid by up to an additional two (2) weeks from original submission date.
2. The right to reject any/or all bids and to make award as it may appear to be advantageous to the Brownsville Public Utilities Board.
3. The right to hold bid for 90 calendar days from submission date without action, and to waive all informalities in any bid.
4. The right to extend the total bid beyond the original 90-calendar day period prior to an award, if agreed upon in writing by all parties (BPUB and vendor/contractor) and if bidder/vendor holds original bid prices firm.
5. The right to terminate for cause or convenience all or any part of the unfinished portion of the Project resulting from this solicitation within seven (7) calendar days written notice; for cause: upon default by the vendor/contractor, for delay or non-performance by the vendor/contractor; or if it is deemed in the best interest of the BPUB for BPUB's convenience. (See, General Conditions Article 15)

- **Corrections**

Any interpretation, correction, or change of the Invitation to Bid will be made by written ADDENDUM. Changes or corrections will be issued by the Brownsville PUB Purchasing Department. **Addenda will be emailed to all who have returned the Bid Acknowledgment form.** Addenda will be issued as expeditiously as possible. It is the responsibility of the vendors/contractors to determine whether all Addenda have been received. It will be the responsibility of all respondents to contact the Brownsville PUB prior to submitting a response to the Invitation to Bid to ascertain if any/all Addenda have been issued, and to obtain any all Addenda, execute them, and return Addenda with the response to the Invitation to Bid. Addenda may also be posted on BPUB's website.

1. RECEIPT AND OPENING OF BIDS:

The Brownsville Public Utilities Board, City of Brownsville, Texas (hereinafter called OWNER), invites bids on the form attached hereto, all blanks of which must be appropriately filled in, in ink, for Project entitled "**Bid B012-24, TOWN RESACA WATERSHED PROJECT**".

The OWNER may consider informal and non-responsive, any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn by vendor/contractor prior to the above scheduled time for the opening of bids or OWNER authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No BIDDER may withdraw a bid within at least ninety (90) calendar days after the actual date of the opening thereof.

2. INSPECTION OF SITE:

Each BIDDER shall visit the Project site of the proposed Work and fully acquaint himself with the

existing conditions there relating to construction and labor, and shall fully inform himself as to the facility involved, the difficulties and restrictions attending the performance of the Contract. The BIDDER shall 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 instrument, or to visit the Project site and acquaint himself with the conditions there existing and the OWNER will be justified in rejecting any claim for extra time, or compensation, or both, based on facts regarding which Contractor should have been on notice as a result of such a diligent Project site visitation. Visits to the Project site shall be arranged by calling Ricardo Pineda, at telephone no. 956-983-6227.

3. PREPARATION OF BID AND USE OF SEPARATE BID FORMS:

These Contract Documents include a complete set of bidding documents. The BIDDER shall copy all Documents listed in the table of contents under the heading BIDDING DOCUMENTS and shall submit two sets (original signed and one signed photocopy) of his bid on these forms. A bid shall be comprised of the BIDDING DOCUMENTS completed by the BIDDER plus supplemental information required by the Specifications and Contract Documents.

If any of the information submitted as part of the bid is considered to be proprietary by the BIDDER, he shall conspicuously identify such intended confidential information in his bid. BPUB is subject to the provisions of the Texas Public Information Act and cannot legally guarantee confidentiality of submittals and may need to consult with its legal counsel and the Texas Attorney General in rendering decisions on any requested disclosures.

- a) Preparation. Each bid shall be carefully prepared using the bid and bid data forms included as a part of the bidding documents. Entries on the bid and bid data forms shall be typed, using dark black ink, or legibly written in black ink. All prices shall be stated in written words and numeric figures, except where the forms provide for figures only. In case of discrepancy, especially in any sum total extensions, the amount shown in written words will generally prevail over numeric unit prices.

The BIDDER shall acknowledge, in the space provided in the bid form, receipt of each Addendum issued for the Specifications and Documents during the bidding period.

The BIDDER shall assemble all drawings, catalog data, and other supplementary information necessary to thoroughly describe Work, materials and equipment covered by the bid, and shall attach such supplemental information to the copies of the Specifications and documents submitted.

- b) Signatures. Each BIDDER shall sign the bid with his usual signature and shall give his full business title and address. The BIDDER's corporate name stated on the bid shall be the exact legal name of the firm. The names of all persons signing should also be typed or printed below the signature.

Bids by partnerships shall be signed with the partnership name followed by the signature and designation title/officer of one of the partners or other authorized representatives. A complete list of the partners shall be included with the bid.

Bids by a corporation shall be signed in the official corporate name of the corporation, followed by the signature and designation of the "president," "secretary," or other legally appropriate person authorized to bind the corporation.

A bid by a person who affixes to his signature the word "president," "secretary," "agent," or other designation, without disclosing his principal corporation, will be rejected. Satisfactory evidence of the legal authority of the officer signing on behalf of the corporation shall be furnished. Bidding corporations shall designate the state in which they are incorporated and the address of their principal office.

- c) Submittal. The original signed bid (and its accompanying photocopy) shall be transmitted to arrive at the designated BPUB address not later than the date and time stipulated in the Legal Notice and Invitation to Bid.

Submit the original signed bid (and its accompanying photocopy) to:

Brownsville Public Utilities Board
1155 FM 511
Olmito, Texas 78575
Attention: Ms. Diane Solitaire
Purchasing Department

Each bid must be submitted in duplicate as stated above (original signature and photocopy), in a sealed envelope bearing on the outside the name of the BIDDER, his address, and the name of the Project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid itself must be enclosed in another mailing envelope addressed as specified in the bid form.

4. METHOD OF BIDDING: UNIT PRICE AND LUMP SUM.

Prices shall be firm, not subject to qualification, condition or adjustment. Prices shall be in United States dollars. Prices shall be lump sum, except where unit prices are requested by the bid forms. When unit price items are required by the bid, the unit prices for each of the several items in the bid of each BIDDER 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 that requirement may be rejected as informal and non-responsive. The special attention of all BIDDERS is called to this provision, (See: General Conditions paragraph 11.9) for should conditions make it necessary to revise any unit price quantities, generally, a fifteen (15%) percent plus or minus tolerance quantity limit will be fixed for such increased or decreased quantities for which no extra compensation will be allowed, provided the net monetary value of all such additive and subtractive changes in quantities of such items of work pursuant to public competitive bidding statutes (i.e., difference in cost) shall not cumulatively increase or decrease the original Contract Price by more than twenty-five (25%) percent. A

proposed decrease only, that exceeds twenty-five (25%) percent of the original Contract Price must be agreed to in writing in advance by the Contractor.

5. DISCLOSURE BY BIDDER:

Each BIDDER shall submit with the bid documents, on the form furnished for that purpose, his Pre-Bid Disclosure Statement showing his experience record in performing the type of work embraced in the contract, his organization and equipment available for the work contemplated, and, when specifically requested by the OWNER, a detailed financial statement. The OWNER shall have the right to take such steps as it deems necessary, including telephonic contact to other owner references, to determine the ability and responsibility of the BIDDER to perform his obligations under the Contract and the BIDDER shall be responsive in furnishing the OWNER all such information and data for this purpose as it may request. OWNER reserves the right to reject any bid where an investigation of the available evidence or information does not satisfy the OWNER that the BIDDER is responsible to properly carry out the terms of the Contract. This shall also apply to any proposed subcontractor(s).

6. SUBCONTRACTS:

The BIDDER is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the OWNER, and that a Pre-Bid Disclosure Statement for each proposed subcontractor must also be submitted with the bid documents.

7. BID SECURITY:

Each bid must be accompanied by a certified or cashier's check, or a bid bond prepared on the form of the bid bond attached hereto, duly executed by the BIDDER as principal, and having as surety therein a surety company approved by the OWNER, and authorized to do business in the State of Texas, in the amount of not less than five (5%) percent of the total bid amount, but not less than \$2,500.00. Such checks, or bid bonds will be returned to all except the three lowest BIDDERS within fifteen (15) calendar days after the opening of bids, and the remaining checks, or bid bonds will be returned promptly after the OWNER and the accepted successful BIDDER have executed the Contract or if no award has been made, within Ninety (90) calendar days after the date of the opening of bids. The bid security will be returned upon demand of the BIDDER at any time thereafter, so long as he has not been notified of the acceptance of his bid.

8. ADDENDA AND INTERPRETATIONS:

No oral interpretations by OWNER and its representatives shall be binding upon OWNER as to the meaning of the Plans, Specifications, Contract Documents, or other pre-bid documents.

Every request for such interpretation should be made in writing, addressed to Diane Solitaire, BPUB Purchasing Department. Any interpretation, correction, or change to the Invitation to Bid will be made by ADDENDUM. Changes or corrections will be issued by the Brownsville PUB Purchasing Department only and will be on file at the BPUB Department mentioned above.

Addenda will be emailed to all who have returned the Bid Acknowledgement form. Addenda will be issued as expeditiously as possible. It is the BIDDER's responsibility to inquire as to any Addenda issued and failure of any BIDDER to receive any such Addenda or interpretation shall not relieve such BIDDER from any obligation under his bid as submitted. All Addenda so issued shall become part of the Contract Documents. Addenda may also be posted on BPUB's webpage.

Exceptions or conditional qualifications by the BIDDER to the Plans, Technical Specifications, Contract Documents, or other pre-bid documents will not be permitted at the time of submitting the Bid Documents to the OWNER, and any exceptions or conditional qualifications taken by BIDDER, will automatically deem the bid conditional and non-responsive and subject to OWNER rejection.

9. FACSIMILE MODIFICATION:

Any BIDDER may modify (not originally submit) his bid by facsimile communication at any time prior to the scheduled bid closing time for receipt of bids, provided such communication is received by the OWNER, in the BPUB Purchasing Department, prior to the bid closing time, and provided further, the OWNER is satisfied that a written confirmation of the facsimile modification, over the original signature of the BIDDER, was also mailed prior to the bid closing time. The facsimile communication should not reveal the total bid price, but only should provide the clarification, addition or subtraction, or other modification, so that the final bid prices or terms intended will not be known by the OWNER, until the original sealed bid is opened and the Bidder's intended modification computed by OWNER.

Revised bids submitted before the opening of bids, whether forwarded by mail or facsimile, if representing an increase in excess of two percent (2%) of the original bid submittal, must have the bid security (bid bond or check) adjusted accordingly; otherwise the bid will not be considered responsive.

If the written and originally signed confirmation of a bid revision is not received within three (3) calendar days after the bid closing time, no consideration will be given to any proposed adjustment contained in the facsimile modification.

10. TIME FOR RECEIVING BIDS:

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

BIDDERS are cautioned that, while facsimile modifications of bids may be received as provided above, such modifications, if not explicit and if in any sense subject to misinterpretation, shall make the bid so modified or amended, subject to rejection for non-responsiveness.

11. OPENING OF BIDS:

At the time and place fixed for the public opening of bids, the OWNER will cause to be opened and publicly read aloud every bid received within the time set for receiving bids, irrespective of any irregularities therein. BIDDERS and other persons properly interested in a bid (subcontractors, suppliers, etc.) may be present, in person or by representative, but shall carry identification and present same to BPUB as requested.

12. WITHDRAWAL OF BIDS:

Bids may be withdrawn on written, facsimile or electronic transmission request dispatched by the BIDDER in time for delivery in the normal course of business prior to the time fixed for bid opening; provided, that written confirmation of any facsimile withdrawal over the signature of the BIDDER is placed in the mail and postmarked prior to the time set for bid opening. The bid security of any BIDDER withdrawing the bid in accordance with the foregoing conditions will be returned promptly.

13. AWARD OF CONTRACT: REJECTION OF BIDS:

The Contract will be awarded to the responsive and responsible BIDDER submitting the lowest bid complying with the conditions of the Legal Notice and Invitation for Bids. The BIDDER to whom the award is made will be notified at the earliest possible date. The OWNER, however, reserves the right to reject any and all bids and to waive any informality in bids received, whenever such rejection or waiver is in BPUB's interest.

The OWNER reserves the right to consider as not responsible, any BIDDER who does not habitually perform with his own forces the major portions of the Work involved in construction of the improvements embraced in this proposed Contract. This provision is meant to prevent wholesale assignment and "brokering" of awarded contracts.

14. EXECUTION OF AGREEMENT: PERFORMANCE AND PAYMENT BOND:

Subsequent to the Notice of Award and within ten (10) calendar days after the prescribed forms are presented for signature, the successful BIDDER shall execute and deliver to the OWNER an Agreement in the form included in the Contract Documents in such number of copies as the OWNER may require.

Having satisfied all conditions of award as set forth elsewhere in these Documents, the successful BIDDER shall, within the period specified in the preceding paragraph, furnish a Performance Bond and Payment Bond, in accordance with the following parameters:

- a.) For a Contract in excess of \$100,000.00, a Performance Bond shall be executed in the full amount of the Contract, conditioned upon the faithful and timely performance of the Work in accordance with the Plans, Specifications, and Contract Documents. Said Bond shall be solely for the protection of the OWNER.

- b.) For a Contract in excess of \$50,000.00, a Payment Bond shall be executed in the full amount of the Contract, solely for the protection of all proper claimants supplying labor and material in the prosecution of the Work provided for in the Contract, for the use of each such claimant perfecting a proper and timely claim. Payment Bonds are required under Texas law, since no mechanics' liens are allowed against BPUB's public property assets.

When bonds are required, they shall serve as security for the faithful performance of the Contract, and for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted to for labor, materials, tools, equipment, or services of any nature, including utility and transportation services employed or used by him in performing the Work. Such bonds shall be in the same form as that included in the Contract Documents and shall bear the same date as, or a date subsequent to that of the Agreement. The current power of attorney for the person who signs for any surety company shall be attached to such bonds. These bonds shall be signed by a guaranty or surety company legally authorized to do business in the State of Texas and appearing on the most recently issued (as of the date of bid opening) federally qualified U. S. Treasury Circular 570 List of Approved Sureties.

The failure of the successful BIDDER to execute such Agreement and to supply the required bonds and insurance certificates within ten (10) calendar days after the prescribed forms are presented for signature, or within such extended period as the OWNER may grant in writing, based upon reasons determined sufficient by the OWNER, shall constitute a default, and the OWNER may either award the Contract to the next lowest responsive and responsible BIDDER, or re-advertise for bids, and may charge against the defaulting BIDDER the difference between the amount of the defaulted bid and the amount for which a final Contract for the Work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid bond. If a more favorable bid is received by re-advertising, the defaulting BIDDER shall have no claim against the OWNER for a bid bond refund.

15. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT:

The successful BIDDER, upon his failure or refusal to execute and deliver the Contract, Bonds and insurance certificates required within ten (10) calendar days after he has received BPUB notice of the acceptance of his bid, shall forfeit to the OWNER, as mutually agreed to liquidated damages (and not as a penalty) for such failure or refusal, the security provided in the bid bond or otherwise deposited with his bid.

16. TIME OF COMPLETION AND LIQUIDATED DAMAGES:

BIDDER agrees by submission of his bid that PERFORMANCE TIME IS OF THE ESSENCE OF THIS CONTRACT and further agrees to commence Work on the date to be specified in a BPUB written "Notice to Proceed" issued by the OWNER and to Substantially Complete the Project as provided in Article 3 of the Construction Agreement.

BIDDER agrees by submission of his bid to pay as mutually agreed to liquidated damages, and not as a penalty, the sum as provided in said Construction Agreement, Article 3.

17. NOTICE OF SPECIAL CONDITIONS:

Attention is particularly called to those parts of the Contract Documents and Specifications which address the following:

- A. Access to Work - Inspection and testing of materials.
- B. Insurance requirements.
- C. Indemnification by Contractor
- D. Wage and Hour Provisions.
- E. State Sales and Use Tax Exemption Provisions.
- F. Subsurface Geologic Conditions.
- G. Certification Regarding Debarment, Suspension and other Responsibility Requirements (EPA 5700-49).

18. LAWS AND REGULATIONS:

The BIDDER's attention is directed to the fact that all applicable federal, State and local laws, statutes, ordinances, codes and the rules and regulations of all authorities having jurisdiction over construction of the Project, as may be periodically amended, shall apply to the Contract throughout, and they will be mutually deemed to be included in the Contract, the same as though herein written out in full.

19. EQUAL EMPLOYMENT OPPORTUNITY:

Attention of BIDDERS is particularly called to the requirement for ensuring that employees and applicants for employment are not discriminated against because of their race, religion, gender, age, sexual preference, physically challenging condition or national origin.

Equal Opportunity in Employment - All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. Bidders will be required to comply with the President's Executive Order No. 11246, as amended by Executive Order 11375, and as supplemented in Department of Labor regulations 41 CFR, Part 60. The requirements for bidders and contractors under this order are explained in the General Conditions.

20. PRE-BID CONFERENCE:

A pre-bid virtual or in-person meeting between the OWNER, prospective bidders, suppliers, etc., will be held to answer any questions concerning the Work. No Addenda will be issued at this meeting. Subsequent thereto, if necessary to clear up any written questions, a written Addendum will be issued by the OWNER to all pre-bid conference attendees. The pre-bid meeting will be held at the place, time and date indicated in the Legal Notice. Attendance at the Pre-Bid Conference is NOT mandatory for prospective bidders.

21. SUBMITTAL OF TRENCH SAFETY DESIGN: (RESERVED)

For Work involving excavations generally deeper than five (5) feet within narrow trenches, the apparent low BIDDER shall provide the OWNER with a Trench Safety System Plan and a

certificate signed and sealed by a Registered Professional Engineer licensed by the State of Texas, within twenty-one (21) calendar days after the date of the opening of Bids prior to award of the Contract. Failure to timely comply may disqualify BIDDER. This Section may be "Reserved" by BPUB if not applicable to the Work.

22. INFORMATION TO BE SUBMITTED WITH BID:

Each BIDDER shall submit with his bid, the following:

a) Equipment and Materials. In addition to the information submitted on the bid and bid data forms, each BIDDER shall submit all specifications, preliminary drawings, and similar descriptive information necessary to describe completely the equipment and materials he proposes to furnish.

The bid shall be based on using new equipment and materials, which comply with the Specifications and Contract Documents in every respect, unless existing equipment is specifically noted by OWNER for reuse. If alternate or "equal" equipment and materials are indicated in the bid, it shall be understood that the OWNER will have the option of selecting any one of the alternates so indicated and such selection shall not be a cause for extra contractor compensation or extension of time. OWNER specifically reserves the legal right to specify "sole source" equipment or materials in the Specifications when unique circumstances warrant.

b) Contractor's Field Organization and Safety Record.

- (i) An organization chart showing the names of field management, supervisory, technical personnel, and number of employees/workforce available and the details of the management, supervisory, and technical organization which he proposes to use for this Project. The successful BIDDER's organizational concept will be subject to the review and acceptance of the OWNER.
- (ii) The experience record of the Contractor's field superintendent(s) shall be submitted with the bid.
- (iii) The Contractor's job-safety record summary for the previous five (5) years
- (iv) The two most recent year's independently audited Financial Statements
- (v) List of three (3) projects completed by CONTRACTOR of both similar size and scope over the past five (5) years

23. PREFERENCE LAW:

Bid evaluations will take into consideration any Preference Laws of the State of Texas, and any reciprocity laws of other states as they may be addressed by current Texas law.

24. SUBSURFACE GEOLOGIC CONDITIONS: (RESERVED)

Each BIDDER shall be responsible for determining prior to bidding, the types of subsurface materials which will be found. If test borings have been made on the Project site by the BPUB or its consultants, the locations and logs of the test borings are bound as an appendix to these Specifications and Documents.

It is to be expressly understood and acknowledged by the BIDDER, that any information on subsurface geology made available by OWNER for BIDDER'S convenience shall **not be a part of the Contract Documents and there is no expressed or implied guarantee of the data given, nor of the interpretation thereof.**

All excavation for this Project will be unclassified and the BIDDER shall be responsible for investigating and satisfying himself of subsurface geologic conditions (including the presence or likelihood of encountering soils requiring dewatering, rock or rock-like materials) prior to submitting his bid, which shall include any and all costs BIDDER associates with avoiding, managing or removing said subsurface geologic conditions without claim for extra compensation against OWNER.

Should BIDDER desire to perform on-site investigations prior to submitting his bid, he is required to notify the OWNER of such intentions and obtain OWNER's written permission not less than 48 hours prior to performing the investigation. BIDDER is responsible for obtaining all related insurance and necessary permits from all sources.

25. DISPOSAL OF EXCESS MATERIALS:

After completion of this Project there may be in some instances an excess of spoil material or waste material left over. In such cases where there is an excess of material, BIDDER shall load and haul it away from the job site and dispose of it in a legal manner so as not to: trespass; adversely impact any protected wetlands; adversely impact the 100 year flood plain; adversely impact any endangered species; or otherwise create drainage diversions or impoundments. No extra remuneration for this Work will be allowed.

26. EROSION AND SEDIMENT CONTROL MEASURES:

The BIDDER is expected to conduct his Work in such a manner as to minimize any soil erosion or sediment runoff from the construction site. Earth cuts and fills shall have smooth, flat side slopes, as generally indicated on the PLANS, to preclude erosion of the soil. Such operations should be timed consistent with the actual need for doing the Work and only to leave raw, unprotected surfaces for a minimum of time.

Existing lawns are to remain intact as far as practical. Such areas as are disturbed shall be duly restored by the BIDDER to as good as or better than original condition using the same type of grass, shrubs, or cover as the original. The BIDDER shall be responsible for correcting any erosion that occurs at his sole cost without claim for extra compensation.

As construction progresses, and in accordance with State and federal laws regulating stormwater runoff and management from construction sites greater than five acres in size, if applicable, (See: Section 405 of the Water Quality Act of 1987, Section 402(P) as amended), and at locations where erosion with sediment runoff occurs or is likely to occur, the BIDDER shall construct temporary ditches, perimeter siltation screens, retainage levees, drains, inlets, or other works to manage, prevent, or correct the possible conditions. Upon completion of the Work, such facilities shall be

removed by contractor.

During construction, the BIDDER shall take the necessary precautions to see that erosion is controlled and sediment runoff is prevented so as to protect the quality of any neighboring water bodies.

27. SAFETY PROVISIONS:

BIDDER shall provide barricades, flares, warning signs, and/or flagmen so that danger and inconvenience to the OWNER, public, and any job site working personnel, will be mitigated. In addition to any other requirements of the Contract Documents, the BIDDER shall be responsible for familiarity and compliance with all Federal (OSHA), State, railroad and local safety rules, laws and requirements.

28. PROTECTION OF PROPERTY AND EXISTING UTILITIES:

Within developed areas, all public and private property along and adjacent to the BIDDER'S operations, including roads, driveways, lawns, yards, shrubs, drainage gradients, and trees, shall be adequately protected, and when damages occur, they shall be repaired, replaced, or renewed or otherwise put in a condition equal to, or better than, that which existed before the BIDDER caused the damage or removal.

An attempt has been made by BPUB and the ENGINEER to locate and show all known existing utilities on the PLANS, but the possibility remains strong that some underground utilities may exist that have not been shown. The BIDDER, through mandatory contact with local utility owners, shall keep himself informed and take such precautions as necessary to avoid utility damage and unsafe working conditions for employees.

29. WAGES AND HOURS:

The most recent wage rate determination from the U.S. Department of Labor for Cameron County, Texas as amended within the previous three (3) years and as locally adopted by the BPUB, is a part of the Supplementary Conditions and controls minimum wage, hour and any fringe benefits, with the exception that no wage shall be paid below \$8.00 as established locally by the BPUB.

A copy of the appropriate (building and/or heavy/highway) wage rate schedule(s) must be posted at the job site in both English and Spanish and kept posted in a conspicuous place on the site of the Project at all times during construction. The BIDDER shall familiarize himself with the included General and Supplementary Conditions Section entitled "Wage and Labor Standard Provisions - Partial Federally Funded Construction." Copies of the current pre-bid wage rate schedule(s) are included in the Contract Documents, but the responsibility for initial posting and keeping same posted, rests upon the BIDDER.

30. WARRANTY/GUARANTEE:

The BIDDER shall warranty and guarantee the Work, equipment and materials for a period of at

least one (1) year after date of final acceptance in writing by the OWNER. During this period, the BIDDER shall make any repairs and/or replacements of defective equipment and materials and corrections of Work due to poor workmanship or manufacturing, all as may be required for full compliance with the General Conditions, Plans and Specifications. This combined workmanship quality guarantee, and minimal equipment and materials warranty, shall apply to all matters reported by the OWNER in writing within said one (1) year period and this post-construction guarantee/warranty period shall be included in the coverage period set forth in the Performance Bond.

31. STATE SALES AND USE TAX EXEMPTION:

Pursuant to 34 Texas Administrative Code 3.291, in order for the Brownsville PUB to continue to benefit from its status as a State Sales and Use Tax Exempt Organization. Construction contracts must be awarded on a "separated contract" basis. A "separated contract" is one that distinguishes the value of the tangible personal property (materials such as pipe, bricks, lumber, concrete, paint, etc.) to be physically incorporated into the Project realty, from the total Contract Price. Under the "separated contract" format, the Contractor in effect becomes a "seller" to the Brownsville PUB of materials that are to be physically incorporated into the Project realty. As a "seller", the Contractor will issue a "Texas Certificate of Resale" to the supplier in lieu of paying the sales tax on materials at the time of purchase. The Contractor will also issue a "Certificate of Exemption" to the supplier demonstrating that the personal property is being purchased for resale and that the resale is to the Brownsville PUB, which is a sales tax exempt entity under UTCA Tax Code Section 151.309(5). Contractors should be careful to consult the most recent guidelines of the State Comptroller of Public Accounts regarding the sales tax status of supplies and equipment that are used and/or consumed during Project Work (gas, oil, rental equipment), but that are not physically incorporated into the Project realty. Such items are generally not tax exempt. Contractors that have questions about the implementation of this statute are asked to inquire directly with the State Comptroller of Public Accounts, Tax Administration Division, State of Texas, Austin, Texas 78774. Bidders will not include any federal taxes in bid prices since the City of Brownsville and Brownsville PUB are exempt from payment of such federal taxes. "Texas Certificates of Exemption", "Texas Certificates of Resale" and "Texas Sales Tax Permits" are forms available to the Contractor through the regional offices of the State Comptroller of Public Accounts.

BID
B012-24
BPUB Purchasing Department
1155 FM 511
Olmito, Texas 78575
Due: November 22, 2023 at 2:15 PM

Bid of _____ hereinafter called BIDDER, a corporation organized and existing under the laws of the State of _____, or, a partnership, or an individual doing business as _____.

To the Brownsville Public Utilities Board of the City of Brownsville, Texas, hereinafter called OWNER.

Gentlemen:

The undersigned BIDDER, in compliance with your Invitation to Bid for the **TOWN RESACA WATERSHED PROJECT**, having read and examined the Plans and Specifications with related Contract Documents and visited the site of the proposed Work, and being familiar with all of the federal, state and local conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment and supplies, and to construct the Project in accordance with the Contract Documents, within the time set forth herein, and at the Total Base Bid Amount prior to OWNER options on additive/deductive alternates of: (in words and numeric figures)

_____. These price(s) are to cover all expenses incurred in performing the Work required under the Contract Documents, of which this bid is a part. These price(s) are firm and shall not be subject to adjustment, provided this Bid is accepted by OWNER within ninety (90) calendar days after the time set for BPUB receipt of bids.

BIDDER hereby agrees to commence Work under this Contract on or before a date to be specified in a written "Notice to Proceed" to be issued by the OWNER, and to then fully complete the Project within the times established in Article 3 of the Construction Agreement. BIDDER further agrees to pay as liquidated damages, not as a penalty, for failure to do so, the sum(s) established in Article 3 of the Construction Agreement.

BIDDER agrees to perform all Work for which he contracts as described in the Technical Specifications and as shown on the Plans, for the prices indicated on the following Bid Form.

BID SCHEDULE
BASE BID – B012-24
BROWNSVILLE PUBLIC UTILITIES BOARD

The Bidder, in compliance with the Invitation for Bids for the **TOWN RESACA WATERSHED PROJECT**, having examined the scope of work and written Specifications, hereby proposes to furnish construction services for the following Unit prices and lump sums.

BASE BID NO.1 -General

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|----------|---|------|------|------------|-------|
| 1 | Install 12" Gate Valve & Box (Incl. All Fittings & Pavement Removal and Repair) (Complete-In-Place) | 1 | EA | | \$ - |
| 2 | Tie-in to Existing 15" RCP w/ 12" PVC (Complete-In-Place) | 2 | EA | | \$ - |
| 3 | 12" DR-25 PVC (Complete-In-Place) | 20 | LF | | \$ - |
| 4 | Removal of Existing Northern Concrete Weir and Wooden Bridge Structure (Incl. Hauling and Disposal) | 1 | LS | | \$ - |
| 5 | Removal of Existing Southern Concrete Weir and Wooden Bridge Structure (Incl. Hauling and Disposal) | 1 | LS | | \$ - |
| 6 | Remove Existing Brick Pavers and Concrete Sidewalk (Incl. Hauling and Disposal) | 3400 | SF | | \$ - |
| 7 | Remove Existing Trees (Incl. Hauling and Disposal) | 6 | EA | | \$ - |
| 8 | Remove Existing Light Poles (Incl. Electrical Termination, Hauling, and Disposal) | 1 | LS | | \$ - |
| 9 | Remove and Relocate Existing Irrigation Pump (Incl. Irrigation Pump Support, Associated Electrical and Piping, Hauling, and Disposal) | 1 | LS | | \$ - |
| 10 | 2" PVC Sch 80 Electrical Conduit (Incl. Pull Boxes) | 600 | LF | | \$ - |
| 11 | Northern Weir Structure 9' X 8' Concrete Box Culvert w/ Culvert End Wall and Rubicon FGB-2268-1587 FlumeGate (Complete-In-Place) | 1 | LS | | \$ - |
| 12 | Southern Weir Structure 9' X 8' Concrete Box Culvert w/ Culvert End Wall and Rubicon FGB-2268-1587 FlumeGate (Complete-In-Place) | 1 | LS | | \$ - |
| 13 | Bulkhead (Including required backfill, Complete-In-Place) | 200 | LF | | \$ - |
| 14 | Remove & Replace 12 'X 20' Concrete Apron (Driveway) | 250 | SF | | \$ - |
| 15 | Brick Pavers and Concrete Sidewalk | 3400 | SF | | \$ - |
| 16 | Topsoil (Post Sodding Leveling Purposes) | 250 | CY | | \$ - |
| 17 | St. Augustine Sod | 2000 | SY | | \$ - |

| | | | | | |
|--|--|------|-----|--|------|
| 18 | Bald Cypress Tree (4" Caliper) (Complete-In-Place w/ Anchoring System) | 8 | EA | | \$ - |
| 19 | Install 10' Dia. Stormwater Treatment Unit (Site 7) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| 20 | Install 12' Dia. Stormwater Treatment Unit (Site 8) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| 21 | 8' Dia. Diversion Structure (Site 7) (Including 10 LF 24" RCP, Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| 22 | 9' x 9' Diversion Structure (Site 8) (Including 10 LF 24" RCP, Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | EA | | \$ - |
| 23 | Traffic Control Plan (Designed and Signed by a Texas Licensed PE) | 1 | LS | | \$ - |
| 24 | Traffic Control Devices & Maintenance During Construction | 9 | MON | | \$ - |
| 25 | SWPPP (Designed & Signed by a Texas Registered Professional Engineer) | 1 | LS | | \$ - |
| 26 | Erosion Control (Inc'l. all TPDES required Permitting, Reporting and Monitoring) | 9 | MON | | \$ - |
| LANDSCAPE TREATMENT A – MANICURED | | | | | |
| 27 | Removal, Tree 6" and Larger | 3 | EA | | \$ - |
| 28 | Excavation and Grading | 1500 | CY | | \$ - |
| 29 | Excavation and Haul Off | 500 | CY | | \$ - |
| 30 | Irrigation | 1 | LS | | \$ - |
| 31 | Bulkhead (Including required backfill, Complete-In-Place) | 1000 | LF | | \$ - |
| 32 | Landscape, Sod | 1100 | SY | | \$ - |
| 33 | Soil, Topsoil (4" depth) | 375 | CY | | \$ - |
| LANDSCAPE TREATMENT B – NATIVE | | | | | |
| 34 | Removal, Tree 6" and Larger | 2 | EA | | \$ - |
| 35 | Removal, Invasive Plant Removal | 4 | AC | | \$ - |
| 36 | Excavation and Grading | 1500 | CY | | \$ - |

| | | | | | |
|------------------------------------|---------------------------------------|-------|----|--|------|
| 37 | Excavation and Haul Off | 1000 | CY | | \$ - |
| 38 | Irrigation | 1 | LS | | \$ - |
| 39 | Bulkhead, Rip Rap, 18"-24" Limestone | 1200 | CY | | \$ - |
| 40 | Soil, Topsoil (4" depth) | 550 | CY | | \$ - |
| 41 | Landscape, Riparian Grasses (5 Gal.) | 730 | EA | | \$ - |
| 42 | Landscape, Riparian Shrubs (10 Gal.) | 60 | EA | | \$ - |
| 43 | Landscape, Riparian Trees (2" Cal.) | 35 | EA | | \$ - |
| 44 | Landscape, Floodplain Trees (3" Cal.) | 45 | EA | | \$ - |
| 45 | Landscape, Sod | 2000 | SY | | \$ - |
| 46 | Landscape Hydroseed, Native Grass Mix | 18100 | SY | | \$ - |
| TOTAL AMOUNT BASE BID NO.1: | | | | | \$ - |

ALTERNATE NO. 1 - SITE 1

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|--|-----|------|------------|-------|
| 47 | Install 5' Dia. Stormwater Treatment Unit (Site 1) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 1 ITEMS: | | | | | \$ - |

ALTERNATE NO. 2 - SITE 2

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|--|-----|------|------------|-------|
| 48 | Install 6' Dia. Stormwater Treatment Unit (Site 2) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 2 ITEMS: | | | | | \$ - |

ALTERNATE NO. 3 - SITE 3

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|--|-----|------|------------|-------|
| 49 | Install 6' Dia. Stormwater Treatment Unit (Site 3) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 3 ITEMS: | | | | | \$ - |

ALTERNATE NO. 4 - SITE 4

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|--|-----|------|------------|-------|
| 50 | Install 5' Dia. Stormwater Treatment Unit (Site 4) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 4 ITEMS: | | | | | \$ - |

ALTERNATE NO. 5 - SITE 5

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|--|-----|------|------------|-------|
| 51 | Install 4' Dia. Stormwater Treatment Unit (Site 5) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 5 ITEMS: | | | | | \$ - |

ALTERNATE NO. 6 - SITE 6

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|--|-----|------|------------|-------|
| 52 | Install 4' Dia. Stormwater Treatment Unit (Site 6) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 6 ITEMS: | | | | | \$ - |

ALTERNATE NO. 7 - SITE 9

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|--|-----|------|------------|-------|
| 53 | Install 4' Dia. Stormwater Treatment Unit (Site 9) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 7 ITEMS: | | | | | \$ - |

ALTERNATE NO. 8 - SITE 10

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|---|-----|------|------------|-------|
| 54 | Install 4' Dia. Stormwater Treatment Unit (Site 10) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 8 ITEMS: | | | | | \$ - |

ALTERNATE NO. 9 - SITE 11

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|---|---|-----|------|------------|-------|
| 55 | Install 4' Dia. Stormwater Treatment Unit (Site 11) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| 56 | Concrete Driveway | 235 | SF | | \$ - |
| 57 | Remove Concrete Driveway | 235 | SF | | \$ - |
| 58 | Remove Existing Storm Drain Manhole | 1 | EA | | \$ - |
| TOTAL ALTERNATE NO. 9 ITEMS: | | | | | \$ - |

ALTERNATE NO. 10 - SITE 12

| Item No. | Item Description | Qty | Unit | Unit Price | Total |
|--|---|-----|------|------------|-------|
| 59 | Install 6' Dia. Stormwater Treatment Unit (Site 12) (Demolition, Excavation, Removal, Backfill, Dewatering, Trench Safety, Installation, and all other necessary items, Complete-In-Place) | 1 | LS | | \$ - |
| TOTAL ALTERNATE NO. 10 ITEMS: | | | | | \$ - |

TOTAL AMOUNT OF BID (ITEMS 1- 59): \$ _____

(written in words)

NOTE: Quantities are estimated. The Brownsville PUB reserves the right to increase or decrease quantities as allowed by Texas law (plus or minus 25%) percent and as deemed necessary by OWNER, without impacting the quoted unit prices. Prospective bidders are encouraged to visit and assess the existing Project site and structures prior to submitting a bid.

BIDDER Acknowledges receipt of the following Addenda:

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

| Work Subcontracted | Name of Subcontractor |
|--------------------|-----------------------|
| <hr/> | <hr/> |
| <hr/> | <hr/> |
| <hr/> | <hr/> |
| <hr/> | <hr/> |
| <hr/> | <hr/> |

Bid amounts are to be legibly shown in both words and figures. In case of discrepancy, the unit price amount written in words will govern.

The above lump sum and unit prices shall include all labor, materials, excavation, bailing, shallow groundwater dewatering, shoring, removal, backfill, overhead, profit, insurance, etc., to cover the finished Work of the several kinds called for.

BIDDER understands that the OWNER reserves the right to reject any or all bids and to waive any informalities in the bidding and to elect to opt for any additive or deductive alternates in arriving at a final Contract price.

BIDDER agrees that this bid shall be good and may not be withdrawn for a period of ninety (90) calendar days after the scheduled bid opening.

The undersigned hereby declares that only the persons or firms interested in the bid as principal or principals are named herein, and that no other persons or firms than are herein mentioned have any interest in this Bid or in the Contract to be entered into; that this Bid is made without connection with any other person, company, or entities likewise submitting a bid or bid; and that it is in all respects for and in good faith, without collusion or fraud.

Upon receipt of written notice of the acceptance of this bid, BIDDER will execute the formal Contract attached within ten (10) calendar days and deliver the Bonds and Insurance Certificates as required under the GENERAL CONDITIONS. The Bid security attached in the sum of _____ (\$_____) is to become the property of the

OWNER in the event the Contract, Bonds, and insurance certificates are not executed or delivered within the time above set forth, as mutually agreed to liquidated damages and not as a penalty for the delay and additional administrative expense to the OWNER caused thereby; otherwise the Bid security will be returned upon the signing of the Contract and delivering the approved Bonds and Insurance Certificates.

Seal affixed here if BID is by a Corporation:
Respectfully submitted,

By: _____
Signature (**Failure to sign disqualifies bid**)

Title

Address

Attest: _____

BID BOND

STATE OF §
 § KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF §

THAT WE, the undersigned, _____
_____ as Principal, and
_____ as Surety, are hereby held and firmly bound unto the
BROWNSVILLE PUBLIC UTILITIES BOARD OF THE CITY OF BROWNSVILLE, TEXAS,
Obligee, as OWNER in the penal sum of _____
_____ for the
payment of which, well and truly to be made, we hereby jointly and severally bind ourselves,
successors and assigns.

Signed, this _____ day of _____, 20__.

The Condition of the above obligation is such that whereas the Principal has submitted to the
OWNER a certain BID attached hereto and hereby made a part hereof to enter into a Contract in
writing, for construction of the **TOWN RESACA WATERSHED PROJECT**

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 Construction Agreement attached hereto (properly completed in
accordance with said BID) and shall timely furnish any Payment and Performance
Bonds required for his faithful performance of said Contract, and for the payment
of all persons performing labor or furnishing materials in connection therewith, and
shall timely furnish proper Insurance Certificates, and shall in all other respects
perform the Agreement created by the BPUB acceptance of said BID,

then this obligation shall be void. Otherwise the same shall remain in full 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 BID BOND shall be in no way impaired or affected by an extension of the time within which
the OWNER may accept such BID; and said Surety does hereby waive notice of any such
extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto legally 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 legally authorized officers, the day and year first set forth
above.

Signed, this ____ day of _____, 20__.

Principal

Surety

By:_____

IMPORTANT - Surety companies executing BONDS must be legally authorized by the State Board of Insurance to transact business in the State of Texas, and be currently listed as approved federal sureties in the most recently issued (as of the date of bid opening) edition of the U. S. Treasury Circular 570.

**CONTRACTOR'S
PRE-BID DISCLOSURE STATEMENT**

All questions must be answered or your bid may be deemed non-responsive and subject to rejection. The data given must be clear and comprehensive. **This statement must be notarized.** If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional relevant information he desires.

1. This Pre-Bid Disclosure Statement is submitted to the Brownsville Public Utilities Board by:

_____ a Corporation, ___ a Partnership, ___ a Texas Joint Venture, or ___ an Individual.
 Address: _____ Contractor's Telephone #: _____
 City _____ State _____ Zip Code _____

2. Years in business under present business name: _____

3. Years of experience in construction work of the type called for in this Contract as: A General Contractor _____, A Subcontractor _____.

4. What projects has your organization completed? List most recent FIRST.

| Contract | Type of Work | Date Completed | Owners Name and Address | Amount |
|----------|--------------|----------------|-------------------------|--------|
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5. What projects does your organization have under way as of this date?

| Contract | Type of Work | Date Completed | Owners Name and Address | Amount |
|----------|--------------|----------------|-------------------------|--------|
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6. Have you ever failed to complete any work awarded to you?
 ___ Yes ___ No. If "Yes", state where and why. _____

7. Are you at present in any binding arbitrations and/or lawsuits involving construction work of any type?
 ___ Yes ___ No. If "Yes", explain: _____

8. Explain in detail the manner in which you have inspected the work and jobsite proposed in this contract: _____

9. Explain in detail your plan or layout for performing the work proposed in this contract: _____

10. If this contract is awarded to you, your company's office administrative manager for the work will be Mr. (Ms.) _____, and your resident construction superintendent will be Mr. (Ms.) _____.

11. What experience in this type of work does the individual designated as resident superintendent above have? _____

12. What portions of the work do you intend to subcontract? _____

13. What equipment do you own or lease that is available for the proposed work?

| Quantity | Description, Size Capacity, Etc. | Condition | Years in Service | Present Location |
|----------|----------------------------------|-----------|------------------|------------------|
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14. Have you received firm offers from all suppliers or manufacturers for all major items of material and/or equipment within the Base Bid Amount used in preparing your bid? Yes No

15. Attach resumes for the principal members of your organization, including the officers as well as the proposed superintendent for the project.

Credit available: \$_____ Bank Reference: _____

Bonding Capacity available: \$_____

The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by either the Owner’s Engineer or Owner in verification of the recitals comprising this Pre-Bid Disclosure Statement.

The signatory of this questionnaire guarantees the truth and accuracy of all statements herein made and all answers herein expressed.

Dated this ____ day of _____, 20__.

By: _____

Title: _____

STATE OF _____

COUNTY OF _____

Subscribed and sworn to before me this ____ day of _____, 20__.

Notary Public

My commission expires: _____

**SUBCONTRACTOR'S
PRE-BID DISCLOSURE STATEMENT**

All Subcontractor questions must be answered or the General Contractor's Bid may be deemed non-responsive and subject to rejection. The data given must be clear and comprehensive. **This statement must be notarized**. If necessary, questions may be answered on separate attached sheets. The prospective Subcontractor may submit any additional relevant information he desires.

1. This Pre-Bid Disclosure Statement is submitted to the Brownsville Public Utilities Board by: _____

__ a Corporation, __ a Partnership, __ a Texas Joint Venture, or __ an Individual.

Address: _____ Contractor's #: _____
City _____ State _____ Zip Code _____

2. Years in business under present business name: _____

3. Years of experience in construction work of the type called for in this Contract as: A General Contractor _____, A Sub-contractor _____.

4. Have you ever previously worked as a subcontractor for this General Contractor? _____
Yes; _____ No; If yes, list three most recent projects in which your company has served as a subcontractor to this General Contractor.

5. What projects has your organization completed? List most recent FIRST.

| Contract | Type of Work | Date Completed | Owners Name and Address | Amount |
|----------|--------------|----------------|-------------------------|--------|
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6. What projects does your organization have under way as of this date?

| Contract | Type of Work | Date Completed | Owners Name and Address | Amount |
|----------|--------------|----------------|-------------------------|--------|
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7. Have you ever failed to complete any work awarded to you?

___ Yes ___ No. If "Yes", state where and why. _____

8. Are you at present in any binding arbitrations and/or lawsuits involving construction work of any type?

___ Yes ___ No. If "Yes", explain: _____

9. Explain in detail the manner in which you have inspected the work and jobsite proposed in this contract: _____

10. Explain in detail your plan or layout for performing the work proposed in this contract: _____

11. If this subcontract is awarded to you by the general contractor, your company's office administrative manager for the work will be Mr. (Ms.) _____, and your resident construction superintendent will be Mr. (Ms.) _____.

12. What experience in this type of work does the individual designated as resident superintendent above have? _____

13. What portions of the work do you intend to subtier subcontract?

14. What equipment do you own that is available for the proposed work?

| Quantity | Description, Size Capacity, Etc. | Condition | Years in Service | Present Location |
|----------|----------------------------------|-----------|------------------|------------------|
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15. Have you received firm offers from suppliers or manufacturers for all major items of material and/or equipment within the price totals used in preparing your subcontractor bid?
 ___ Yes ___ No

16. Attach resumes for the principal members of your organization, including the officers as well as the proposed superintendent for the project.

Credit available: \$_____ Bank Reference: _____

Bonding Capacity available: \$_____

The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by either the Owner's Engineer or Owner in verification of the recitals comprising this Subcontractor Pre-Bid Disclosure Statement.

The signatory of this questionnaire guarantees the truth and accuracy of all statements herein made and all answers herein expressed.

Dated this ____ day of _____, 20__.

By: _____

Title: _____

STATE OF _____

COUNTY OF _____

Subscribed and sworn to before me this ____ day of _____, 20__.

Notary Public

My commission expires: _____

REQUIRED FORMS CHECKLIST

The following documents are to be submitted as a part of the Bid/RFP/RFQ document

| NAME | FORM DESCRIPTION | SUBMITTED WITH BID | |
|---|--|---------------------------------|--------------------------------|
| | | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Required Forms (if applicable) | Acknowledgement Form | <input type="checkbox"/> | <input type="checkbox"/> |
| | Debarment Certificate | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ethic Statement | <input type="checkbox"/> | <input type="checkbox"/> |
| | Conflict of Interest Questionnaire | <input type="checkbox"/> | <input type="checkbox"/> |
| | W9 or W8 Form | <input type="checkbox"/> | <input type="checkbox"/> |
| | Direct Deposit Form (will be provided to the awarded vendor) | <input type="checkbox"/> | <input type="checkbox"/> |
| | Residence Certification Form | <input type="checkbox"/> | <input type="checkbox"/> |
| Special Instructions (if applicable) | Bid Schedule/Cost sheet completed and signed | <input type="checkbox"/> | <input type="checkbox"/> |
| | Cashier Check or Bid Bond of 5% of Total Amount of Bid | <input type="checkbox"/> | <input type="checkbox"/> |
| | OSHA 300 Log | <input type="checkbox"/> | <input type="checkbox"/> |
| | Contractor Pre-Bid Disclosure completed, signed and notarized | <input type="checkbox"/> | <input type="checkbox"/> |
| | Sub-Contractor Pre-Bid Disclosure completed, signed, and notarized | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> |
| References | Complete the Previous Customer Reference Worksheet for each reference provided | <input type="checkbox"/> | <input type="checkbox"/> |
| Addenda | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> |

Prospective Bidders are respectfully reminded to completely read and thoroughly respond to the BPUB Instructions for Bidders and Pre-Bid Disclosure Statement. When BPUB evaluates the Bids, it reviews indices regarding the prospective contractors' responsibility to perform the project based upon prior job performances for BPUB and other public owners. Additionally, BPUB carefully reviews the prospective contractors' responsiveness to the BPUB Bid Advertisement. Bidders should thoroughly check their submittal for completeness prior to responding to BPUB. Do not imbalance your Bid line items to overload portions of the work. Remember to answer all written questions in the Pre-Bid Disclosure Statement and then notarize it when signing. Bidders are often required to submit OSHA 300 Logs from prior job performance records as well. BPUB can, has, and will reject Bids that fail the responsibility and/or responsiveness standards so as to protect the integrity of the bidding process for all participants. The Bidding community's compliance with these guideline standards will be appreciated by the BPUB.

ETHICS STATEMENT
(Complete and return with bid)

The undersigned bidder, by signing and executing this bid, certifies and represents to the Brownsville Public Utilities Board that bidder has not offered, conferred or agreed to confer any pecuniary benefit, as defined by (1.07 (a) (6) of the Texas Penal Code, or any other thing of value as consideration for the receipt of information or any special treatment of advantage relating to this bid; the bidder also certifies and represents that the bidder has not offered, conferred or agreed to confer any pecuniary benefit or other thing of value as consideration for the recipient's decision, opinion, recommendation, vote or other exercise of discretion concerning this bid, the bidder certifies and represents that bidder has neither coerced nor attempted to influence the exercise of discretion by any officer, trustee, agent or employee of the Brownsville Public Utilities Board concerning this bid on the basis of any consideration not authorized by law; the bidder also certifies and represents that bidder has not received any information not available to other bidders so as to give the undersigned a preferential advantage with respect to this bid; the bidder further certifies and represents that bidder has not violated any state, federal, or local law, regulation or ordinance relating to bribery, improper influence, collusion or the like and that bidder will not in the future offer, confer, or agree to confer any pecuniary benefit or other thing of value of any officer, trustee, agent or employee of the Brownsville Public Utilities Board in return for the person having exercised their person's official discretion, power or duty with respect to this bid; the bidder certifies and represents that it has not now and will not in the future offer, confer, or agree to confer a pecuniary benefit or other thing of value to any officer, trustee, agent, or employee of the Brownsville Public Utilities Board in connection with information regarding this bid, the submission of this bid, the award of this bid or the performance, delivery or sale pursuant to this bid.

THE VENDOR/CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE CITY OF BROWNSVILLE AND THE BROWNSVILLE PUBLIC UTILITIES BOARD, ALL OF THEIR OFFICERS, AGENTS AND EMPLOYEES FROM AND AGAINST ALL CLAIMS, ACTIONS, SUITS, DEMANDS, PROCEEDINGS, COSTS, DAMAGES, AND LIABILITIES, ARISING OUT OF, CONNECTED WITH, OR RESULTING FROM ANY NEGLIGENT ACTS OR OMISSIONS OF CONTRACTOR OR ANY AGENT, EMPLOYEE, SUBCONTRACTOR, OR SUPPLIER OF CONTRACTOR IN THE EXECUTION OR PERFORMANCE OF THIS BID.

I have read all of the specifications and general bid requirements and do hereby certify that all items submitted meet specifications.

COMPANY: _____

AGENT NAME: _____

AGENT SIGNATURE: _____

ADDRESS: _____

CITY: _____

STATE: _____ ZIP CODE: _____

TELEPHONE: _____ TELEFAX: _____

FEDERAL ID#: _____ AND/OR SOCIAL SECURITY #: _____

DEVIATIONS FROM SPECIFICATIONS IF ANY:

NOTE: QUESTIONS AND CONCERNS FROM PROSPECTIVE CONTRACTORS SHOULD BE RAISED WITH OWNER AND ITS CONSULTANT (IF APPLICABLE) AND RESOLVED IF POSSIBLE, PRIOR TO THE BID SUBMITTAL DATE. ANY LISTED DEVIATIONS IN A FINALLY SUBMITTED BID MAY ALLOW THE OWNER TO REJECT A BID AS NON-RESPONSIVE.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
AND OTHER RESPONSIBILITY MATTERS
(Complete and Return with Bid)

Name of Entity: _____

The prospective participant certifies to the best of their knowledge and belief that they and their principals:

- a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b) Have not within a three (3) year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, Local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and
- d) Have not within a three (3) year period preceding this bid had one or more public transactions (Federal, State, Local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this bid or termination of the award. In addition, under 18 USC Section 1001, a false statement may result in a fine up to a \$10,000.00 or imprisonment for up to five (5) years, or both.

Name and Title of Authorized Representative (Typed)

Signature of Authorized Representative

Date

I am unable to certify to the above statements. My explanation is attached.

EPA FORM 5700-49 (11-88)

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY & SUBMITTED WITH BID RESPONSE

| CONFLICT OF INTEREST QUESTIONNAIRE For vendor doing business with local governmental entity | | FORM CIQ |
|--|---------------------------|-----------------|
| <p>This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.</p> <p>This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).</p> <p>By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.</p> <p>A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.</p> | OFFICE USE ONLY | |
| <p>1 Name of vendor who has a business relationship with local governmental entity.</p> | Date Received | |
| <p>2 <input type="checkbox"/> Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)</p> | | |
| <p>3 Name of local government officer about whom the information is being disclosed.</p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Name of Officer</p> | | |
| <p>4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.</p> <p style="margin-left: 40px;">A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?</p> <p style="margin-left: 80px;"> <input type="checkbox"/> Yes <input type="checkbox"/> No </p> <p style="margin-left: 40px;">B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?</p> <p style="margin-left: 80px;"> <input type="checkbox"/> Yes <input type="checkbox"/> No </p> | | |
| <p>5 Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.</p> | | |
| <p>6 <input type="checkbox"/> Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).</p> | | |
| <p>7</p> <p style="text-align: center;"> _____ Signature of vendor doing business with the governmental entity </p> <p style="text-align: right; margin-right: 100px;"> _____ Date </p> | | |

CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

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

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

- (A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;
- (B) a transaction conducted at a price and subject to terms available to the public; or
- (C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that

- (i) a contract between the local governmental entity and vendor has been executed; or
- (ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that:

- (i) a contract between the local governmental entity and vendor has been executed; or
- (ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

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

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

(1) the date that the vendor:

- (A) begins discussions or negotiations to enter into a contract with the local governmental entity; or
- (B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

- (A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);
- (B) that the vendor has given one or more gifts described by Subsection (a); or
- (C) of a family relationship with a local government officer.

BROWNSVILLE PUBLIC UTILITIES BOARD
RESIDENCE CERTIFICATION

In accordance with Chapter 2252 of the Texas Government Code, the following will apply. The pertinent portion of the Code has been extracted and is as follows:

Section 2252.001

- (3) "Nonresident bidder" refers to a person who is not a resident of Texas.
- (4) " Resident bidder " refers to a person whose principal place of business is in this State, including a contractor whose ultimate parent company or majority owner has its place of business in this State.

Section 2252.002

A governmental entity may not award a governmental contract to a nonresident bidder unless the nonresident bidder underbids the lowest bid submitted by a responsible resident bidder by an amount that is not less than the amount by which a resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in:

- (1) The state in which the nonresident's principal place of business is located; or
- (2) A state in which the nonresident is a resident manufacturer.

I certify that _____ (Company Name)
is a **resident Texas bidder** as defined in Section 2252.001(4) of the Texas Government Code.

Signature: _____

Print Name: _____

I certify that _____ (Company Name)
is a **nonresident bidder** as defined in Section 2252.001(3) of the Texas Government Code and
our principal place of

business is: _____
(City and State)

Signature: _____

Print Name: _____

**Request for Taxpayer
Identification Number and Certification**

**Give Form to the
requester. Do not
send to the IRS.**

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

| | | |
|--|---|---|
| Print or type. See Specific Instructions on page 3. | <p>1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.</p> <p>2 Business name/disregarded entity name, if different from above</p> <p>3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.</p> <p><input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate</p> <p><input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____</p> <p>Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</p> <p><input type="checkbox"/> Other (see instructions) ▶ _____</p> | <p>4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):</p> <p>Exempt payee code (if any) _____</p> <p>Exemption from FATCA reporting code (if any) _____</p> <p><small>(Applies to accounts maintained outside the U.S.)</small></p> |
| | <p>5 Address (number, street, and apt. or suite no.) See instructions.</p> <p>6 City, state, and ZIP code</p> <p>7 List account number(s) here (optional)</p> | <p>Requester's name and address (optional)</p> |

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

| | | | | | |
|--|---|---|---|---|--|
| Social security number | | | | | |
| <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:25%; border: 1px solid black; height: 20px;"></td> <td style="width:2%; border: 1px solid black; text-align: center;">-</td> <td style="width:25%; border: 1px solid black; height: 20px;"></td> <td style="width:2%; border: 1px solid black; text-align: center;">-</td> <td style="width:46%; border: 1px solid black; height: 20px;"></td> </tr> </table> | | - | | - | |
| | - | | - | | |
| or | | | | | |
| Employer identification number | | | | | |
| <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:25%; border: 1px solid black; height: 20px;"></td> <td style="width:2%; border: 1px solid black; text-align: center;">-</td> <td style="width:73%; border: 1px solid black; height: 20px;"></td> </tr> </table> | | - | | | |
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Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

| | | |
|------------------|----------------------------|--------|
| Sign Here | Signature of U.S. person ▶ | Date ▶ |
|------------------|----------------------------|--------|

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

**Certificate of Status of Beneficial Owner for
 United States Tax Withholding and Reporting (Entities)**

▶ For use by entities. Individuals must use Form W-8BEN. ▶ Section references are to the Internal Revenue Code.
 ▶ Go to www.irs.gov/FormW8BENE for instructions and the latest information.
 ▶ Give this form to the withholding agent or payer. Do not send to the IRS.

Do NOT use this form for:

Instead use Form:

- U.S. entity or U.S. citizen or resident W-9
- A foreign individual W-8BEN (Individual) or Form 8233
- A foreign individual or entity claiming that income is effectively connected with the conduct of trade or business within the United States (unless claiming treaty benefits) W-8ECI
- A foreign partnership, a foreign simple trust, or a foreign grantor trust (unless claiming treaty benefits) (see instructions for exceptions) . . . W-8IMY
- A foreign government, international organization, foreign central bank of issue, foreign tax-exempt organization, foreign private foundation, or government of a U.S. possession claiming that income is effectively connected U.S. income or that is claiming the applicability of section(s) 115(2), 501(c), 892, 895, or 1443(b) (unless claiming treaty benefits) (see instructions for other exceptions) W-8ECI or W-8EXP
- Any person acting as an intermediary (including a qualified intermediary acting as a qualified derivatives dealer) W-8IMY

Part I Identification of Beneficial Owner

| | |
|--|---|
| 1 Name of organization that is the beneficial owner | 2 Country of incorporation or organization |
|--|---|

3 Name of disregarded entity receiving the payment (if applicable, see instructions)

4 Chapter 3 Status (entity type) (Must check one box only):

| | | | |
|--|---|--|---|
| <input type="checkbox"/> Simple trust | <input type="checkbox"/> Tax-exempt organization | <input type="checkbox"/> Corporation | <input type="checkbox"/> Partnership |
| <input type="checkbox"/> Central Bank of Issue | <input type="checkbox"/> Private foundation | <input type="checkbox"/> Complex trust | <input type="checkbox"/> Foreign Government - Controlled Entity |
| <input type="checkbox"/> Grantor trust | <input type="checkbox"/> Disregarded entity | <input type="checkbox"/> Estate | <input type="checkbox"/> Foreign Government - Integral Part |
| | <input type="checkbox"/> International organization | | |

If you entered disregarded entity, partnership, simple trust, or grantor trust above, is the entity a hybrid making a treaty claim? If "Yes," complete Part III. Yes No

5 Chapter 4 Status (FATCA status) (See instructions for details and complete the certification below for the entity's applicable status.)

| | |
|---|---|
| <input type="checkbox"/> Nonparticipating FFI (including an FFI related to a Reporting IGA FFI other than a deemed-compliant FFI, participating FFI, or exempt beneficial owner). <input type="checkbox"/> Participating FFI. <input type="checkbox"/> Reporting Model 1 FFI. <input type="checkbox"/> Reporting Model 2 FFI. <input type="checkbox"/> Registered deemed-compliant FFI (other than a reporting Model 1 FFI, sponsored FFI, or nonreporting IGA FFI covered in Part XII). See instructions. <input type="checkbox"/> Sponsored FFI. Complete Part IV. <input type="checkbox"/> Certified deemed-compliant nonregistering local bank. Complete Part V. <input type="checkbox"/> Certified deemed-compliant FFI with only low-value accounts. Complete Part VI. <input type="checkbox"/> Certified deemed-compliant sponsored, closely held investment vehicle. Complete Part VII. <input type="checkbox"/> Certified deemed-compliant limited life debt investment entity. Complete Part VIII. <input type="checkbox"/> Certain investment entities that do not maintain financial accounts. Complete Part IX. <input type="checkbox"/> Owner-documented FFI. Complete Part X. <input type="checkbox"/> Restricted distributor. Complete Part XI. | <input type="checkbox"/> Nonreporting IGA FFI. Complete Part XII. <input type="checkbox"/> Foreign government, government of a U.S. possession, or foreign central bank of issue. Complete Part XIII. <input type="checkbox"/> International organization. Complete Part XIV. <input type="checkbox"/> Exempt retirement plans. Complete Part XV. <input type="checkbox"/> Entity wholly owned by exempt beneficial owners. Complete Part XVI. <input type="checkbox"/> Territory financial institution. Complete Part XVII. <input type="checkbox"/> Excepted nonfinancial group entity. Complete Part XVIII. <input type="checkbox"/> Excepted nonfinancial start-up company. Complete Part XIX. <input type="checkbox"/> Excepted nonfinancial entity in liquidation or bankruptcy. Complete Part XX. <input type="checkbox"/> 501(c) organization. Complete Part XXI. <input type="checkbox"/> Nonprofit organization. Complete Part XXII. <input type="checkbox"/> Publicly traded NFFE or NFFE affiliate of a publicly traded corporation. Complete Part XXIII. <input type="checkbox"/> Excepted territory NFFE. Complete Part XXIV. <input type="checkbox"/> Active NFFE. Complete Part XXV. <input type="checkbox"/> Passive NFFE. Complete Part XXVI. <input type="checkbox"/> Excepted inter-affiliate FFI. Complete Part XXVII. <input type="checkbox"/> Direct reporting NFFE. <input type="checkbox"/> Sponsored direct reporting NFFE. Complete Part XXVIII. <input type="checkbox"/> Account that is not a financial account. |
|---|---|

6 Permanent residence address (street, apt. or suite no., or rural route). **Do not use a P.O. box or in-care-of address** (other than a registered address).

| | |
|---|---------|
| City or town, state or province. Include postal code where appropriate. | Country |
|---|---------|

7 Mailing address (if different from above)

| | |
|---|---------|
| City or town, state or province. Include postal code where appropriate. | Country |
|---|---------|

NOTICE OF AWARD

TO: _____

Project Description: TOWN RESACA WATERSHED PROJECT

Dear Sir/Madam:

The Owner, BPUB has considered the BID submitted by you for the above-described Work in response to its Legal Notice and Invitation to Bid dated November 22, 2023 and Instruction to Bidders.

You are hereby notified that after any Owner adjustments to the Base Bid Amount to account for Owner options regarding additive and deductive alternates, your BID has been accepted in the final Contract Price amount of \$_____.

You are required by the Instructions to Bidders to execute the Construction Agreement and furnish any required Contractor's Performance Bond, Payment Bond and Certificates of Insurance within ten (10) calendar days from the date you receive this Notice.

In addition with the Bonds and Insurance Certificates, you must complete, execute, and submit a Contractor Job Safety Analysis (JSA) form. The JSA form is required prior to entering into a contractual agreement with the OWNER, and will be valid for a period of thirty (30) calendar days after which you must complete, execute and submit an updated JSA form. The completed JSA form is included as a part of the Contract Documents.

If you fail to execute this Agreement and furnish any required Bonds, Insurance Certificates, or other certifications within ten (10) calendar days from the date of this Notice, Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your BID as abandoned, and as a forfeiture of your BID BOND.

The Owner will be entitled to such other rights as may be granted by law and equity.

You are required to promptly sign and return an acknowledged copy of this NOTICE OF AWARD to the Owner.

Dated this ____ day of _____, 20__.

BROWNSVILLE PUBLIC UTILITIES BOARD OF THE CITY OF BROWNSVILLE, TEXAS

By: _____
Name: Marie C. Leal, P.E.
Title: Director of Special Projects and
W/WW Engineering – Planning

ACCEPTANCE OF NOTICE OF AWARD

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

_____ this ____ day
of _____, 20__.

By: _____

Name: _____

Title: _____

NOTICE TO PROCEED

TO:

ADDRESS:

Contract for: TOWN RESACA WATERSHED PROJECT

You are notified that the Contract Time under the above Contract will commence to run on _____, 20__. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement, the date of Substantial Completion prior to final payment is _____, 20__.

Before you may start any Work at the site, Bonds and Insurance Certificates along with certain material submittals must be submitted and approved by the BPUB before a BPUB Purchase Order is issued and prior to the purchase and shipment of Work materials.

Brownsville Public Utilities Board:
(Owner)

BY: _____
(Authorized Signature)

NAME: Marie C. Leal, P.E.

TITLE: Director of Special Projects and W/WW
Engineering-Planning

DATE: _____

CONSTRUCTION AGREEMENT

THIS AGREEMENT is by and between the BROWNSVILLE PUBLIC UTILITIES BOARD of the City of Brownsville, Texas (hereinafter called OWNER or BPUB) and _____ of _____ (hereinafter called CONTRACTOR), performing as an independent contractor.

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

Article 1. WORK.

CONTRACTOR shall furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the Work described herein and complete all the Work as specified or indicated in the Contract Documents. The Work is generally described as: South Wastewater Treatment Plant Improvements (hereinafter referred to as "Work" and/or "Project").

Article 2. ENGINEER.

The Project has been designed by OWNER'S independent professional engineering consultant(s): HALFF ASSOCIATES, INC. (hereinafter called ENGINEER).

Article 3. CONTRACT TIME.

3.1 The Work shall be Substantially Completed in accordance with paragraph 14.8 of the General Conditions within **<CONTRACT TIME> (###)** consecutive Calendar Days after the date when the Contract Time commences to run as provided in paragraph 2.3 of the General Conditions, and finally completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions within thirty (30) consecutive Calendar Days after the date of Substantial Completion as established in accordance with paragraph 14.8 of the General Conditions.

CONTRACTOR hereby acknowledges and agrees that the ENGINEER has already included in the calculation of the performance Calendar Days, normal, monthly, non-compensable rain days for Cameron County, Texas, based upon historical monthly National Oceanic and Atmospheric Administration (NOAA) record averages.

3.2 **Liquidated Damages.** OWNER and CONTRACTOR recognize that the **TIME OF PERFORMANCE IS OF THE ESSENCE** in this Agreement and that OWNER will suffer financial loss if the Work is not Substantially Complete within the time specified in Article 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Both Parties hereto also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by OWNER if the Work is not Substantially Complete on time. Accordingly, instead of requiring such proof, OWNER and CONTRACTOR agree that as liquidated damages for the delay (but not as a penalty) CONTRACTOR shall pay

OWNER **FIVE HUNDRED DOLLARS AND NO CENTS (\$500.00)** for each Calendar Day that expires after the time specified in Article 3.1 for Substantial Completion, until the Work is Substantially Complete.

Article 4. CONTRACT PRICE.

4.1 CONTRACTOR shall perform the Work described in the Contract Documents for the amounts shown in the CONTRACTOR'S Bid Schedule, and OWNER shall pay CONTRACTOR in current funds based on the Bid Schedule.

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by OWNER as provided for in the General Conditions.

5.1 **Progress Payments.** OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's mathematically correct Applications for Payment on or about the twentieth-fifth (25th) Calendar Day after submittal of the Application for Payment each month as provided below. All progress payments shall be on the basis of the progress of the Work measured by the Schedule of Values provided for in paragraph 14.1 of the General Conditions.

5.1.2. Prior to Substantial Completion, progress payments shall be in an amount equal to ninety-five percent (95%) of the amount requested in the Application for Payment, with five percent (5%) remaining as OWNER's retainage for the Project, to be released by OWNER in accordance with Article 5.2 below.

5.1.3. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to ninety-five percent (95%) of the Contract Price, less such amounts OWNER shall determine in accordance with paragraphs 14.7 and 14.8 of the General Conditions.

5.2 **Final Payment.** Upon final completion and acceptance of the Work after resolution of any punch list items in accordance with paragraph 14.8 and 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by Engineer as provided in said paragraphs 14.13.

Article 6. CONTRACTOR'S REPRESENTATIONS.

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

6.1 CONTRACTOR has familiarized himself with the Project, nature and extent of the Contract Documents, Work, and with all local conditions and federal, state and local

laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

6.2 CONTRACTOR has made, or caused to be made, examinations and investigations of information as he deems necessary for the performance of the Work at the Contract Price, as determined by the Bid Schedule and finalized Schedule of Values as determined by Article 2 of the General Conditions, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations or similar data are, or will be required by CONTRACTOR for such purposes.

6.3 CONTRACTOR has given OWNER advanced written notice of all obvious conflicts, errors or discrepancies that he has discovered in the Contract Documents prior to bidding, and the written resolution thereof by OWNER was acceptable to CONTRACTOR.

6.4 CONTRACTOR is skilled and experienced to responsibly perform the type of Work described in the Contract Documents in a workmanlike and timely manner.

Article 7. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire Agreement between OWNER and CONTRACTOR are attached to this Construction Agreement, made a part hereof, and consist of the following:

- 7.1 Legal Notice and Invitation to Bid
- 7.2 Instructions to Bidders
- 7.3 Bid Forms and Bid Schedule
- 7.4 Bid Bond
- 7.5 Contractor's and Subcontractor's Pre-Bid Disclosure Statements
- 7.6 Notice of Award and Acceptance of Notice
- 7.7 Notice to Proceed
- 7.8 This Construction Agreement
- 7.9 Performance Bond
- 7.10 Payment Bond
- 7.11 General Conditions
- 7.12 Supplementary General Conditions
- 7.13 Technical Specifications
- 7.14 Addendum number(s) __ (page __).
- 7.15 CONTRACTOR's Certificate(s) of Insurance.
- 7.16 Construction Drawings bearing the following general title: **TOWN RESACA WATERSHED PROJECT** (Sheets C001 through SD1.02)
- 7.17 Any Written Amendment, including Change Orders, duly delivered after execution of this Agreement.

There are no Contract Documents other than those listed above in this Article 7. The Contract Documents may only be altered, amended or repealed by a Written Amendment (as defined in Article 1 of the General Conditions).

Article 8. MISCELLANEOUS.

8.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions shall have the meanings indicated in the General Conditions.

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

8.3 OWNER and CONTRACTOR each binds himself, his partners, successors, assigns and legal representatives to the other Party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

8.4 The invalidity or unenforceability of any provision of the Contract Documents shall not affect the validity or enforceability of any other provision of the Contract Documents.

8.5 This Construction Agreement and the Contract Documents are subject to all applicable local, Texas, federal laws, statutes, codes, ordinances, rules and regulations.

8.6 In the event of default by CONTRACTOR under the Contract Documents, OWNER shall have all rights and remedies afforded to it at law or in equity to enforce the terms of the Contract Documents. The exercise of any one right or remedy shall be without prejudice to the enforcement of any other right or remedy allowed at law or in equity.

8.7 If any action at law or in equity is necessary by OWNER to enforce or interpret the terms of the Contract Documents, OWNER shall be entitled to reasonable attorneys' fees, court costs, expert witness fees, and any necessary and reasonable supporting disbursements, in addition to any other relief to which the OWNER is entitled.

8.8 The Contract Documents constitute the **ENTIRE AGREEMENT BETWEEN THE PARTIES** hereto and supersede any prior written or oral agreements and understandings between the Parties. The Contract can only be modified or amended by written agreement of the Parties.

8.9 These Contract Documents are governed by the laws of the State of Texas and the Parties agree that venue for any litigation/arbitration/mediation arising from these Contract Documents shall lie in Cameron County, Texas.

Article 9. OTHER REQUIREMENTS

- 9.1 Workers' Compensation Insurance (For additional detail see: General Conditions paragraphs 5.3.1 and 5.5.1-2)
- A. By signing this Agreement, CONTRACTOR certifies that it provides workers' compensation insurance coverage for all employees employed on this Project pursuant to Tex. Lab. Code Sections 401 and 406.096(a).
 - B. As required by Section 406.096(b) of same Code, CONTRACTOR must require each Subcontractor to certify in writing to the CONTRACTOR that the Subcontractor provides workers' compensation insurance coverage for all of the employees it employs on this Project. CONTRACTOR must provide these certifications to the OWNER within ten (10) calendar days of the Effective Date of this Agreement.
- 9.2 Prohibition of Contracts with Companies Engaged in Business with Iran, Sudan, or Foreign Terrorist Organizations
- A. See: Tex. Gov't Code Section 2252.152, Subchapter F, which prohibits the award of governmental contracts to companies engaged in business with Iran, Sudan, or foreign terrorist organizations.
 - B. By signing this Agreement, CONTRACTOR certifies that it is not ineligible to be awarded this Contract under said Chapter 2252, Subchapter F.
- 9.3 Prohibition of Contracts with Certain Companies that Boycott Israel
- A. See: Tex. Gov't Code Chapter 2271 which prohibits the award of governmental contracts to companies boycotting Israel.
 - B. By signing this Agreement, CONTRACTOR certifies that it does not boycott Israel and will not boycott Israel during the term of this Contract.
- 9.4 Certificate of Interested Parties: CONTRACTOR must complete and submit a Certificate of Interested Parties (Form 1295) to the OWNER with the signed Agreement as required by Tex. Gov't Code Section 2252.908(e).

(THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK)

IN WITNESS WHEREOF, the Parties hereto have signed this Construction Agreement in triplicate originals. One counterpart each has been delivered to OWNER and CONTRACTOR, and the third will be filed with the ENGINEER.

This Construction Agreement will be Effective on _____, 20__, the date when OWNER signs below.

[NOTE: THE DATE OF THE PAYMENT AND PERFORMANCE BONDS CANNOT PRECEDE THIS EFFECTIVE CONTRACT DATE.]

BROWNSVILLE
PUBLIC UTILITIES BOARD

<CONTRACTOR>

By: _____

By: _____

Name: Marilyn D. Gilbert, MBA

Name: _____

Title: General Manager & CEO

Title: _____

Signature Date: _____

Signature Date: _____

Attest: _____

Attest: _____

Address for giving notices:

Address for giving notices:

Attn: Ricardo Pineda

Attn: _____

1425 Robinhood Drive

Brownsville, TX 78521

(956) 983-6227

rpineda@brownsville-pub.com

CONTRACTOR hereby acknowledges and understands that this is a “separated contract” pursuant to 34 Texas Administrative Code 3.291. The following amount of money represents that part of the total Contract Price representative of the value of tangible personal property to be physically incorporated into the Project realty: \$_____.

[NOTE: SEE GENERAL CONDITIONS PARAGRAPH 6.16, “Taxes”, and “STATE SALES AND USE TAX EXEMPTION.”]

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____
(Name of Contractor as Principal)

(Address of Contractor)

a _____
(corporation, partnership, or individual)

hereinafter called Principal, and

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the PUBLIC UTILITIES BOARD of the City of Brownsville, Texas, hereinafter called OWNER as Obligee, in the penal sum of _____ Dollars (\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract with the OWNER, dated the ____ day of _____, 20____, a copy of which is hereto attached and made a part hereof, for the construction of the Project: **TOWN RESACA WATERSHED PROJECT.**

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one (1) year post-construction workmanship guaranty and minimum materials/equipment warranty period, and if he shall satisfy all claims and demands incurred under such Contract, and **SHALL FULLY INDEMNIFY AND SAVE HARMLESS THE OWNER FROM ALL COSTS AND DAMAGES WHICH IT MAY SUFFER BY REASON OF FAILURE TO DO SO**, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received, hereby stipulates and agrees: that no written change, extension of time, alteration or addition to the terms of the Contract or to Project Work to be performed thereunder, or the Specifications accompanying the same, shall in any ways affect its obligation on this PERFORMANCE BOND, and it does hereby waive notice

of any such written change, extension of time, alteration or addition to the terms of the Contract, or to the Project Work, or to the Specifications.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose timely filed and legally perfected claim may be unsatisfied.

This PERFORMANCE BOND is subject to and governed by Sections 2253.01-079 of the Texas Government Code (Vernon's Texas Codes Annotated) and Chapter 3503 of the Texas Insurance Code (VTCA), and all amendments thereto.

IN WITNESS WHEREOF, this instrument is executed in triplicate originals, each counterpart of which shall be deemed an original, this the ____ day of _____, 20__.

A. ATTEST:

(Principal)

(Principal) Secretary

By: _____(s)
(Signature of legally authorized representative of Principal)
Print Name _____
Print Title _____

(SEAL)

(Witness as to Principal)

(Address)

(Address)

B. ATTEST:

(Surety)

(Surety) Secretary

By: _____
(Signature of Attorney-in-Fact for Surety)
Print Name _____

(SEAL)

(Witness as to Surety)

(Address)

(Address)

NOTE: Date of PERFORMANCE BOND must not be prior to Effective Date (execution date by OWNER) of Contract. If CONTRACTOR is a Partnership, all partners should execute PERFORMANCE BOND.

IMPORTANT: Surety companies executing PERFORMANCE BONDS must be legally authorized by the Texas State Board of Insurance to transact business in the State of Texas, and be currently listed as an approved federal surety in the most recently issued edition (prior to Contract's Effective Date) of the U. S. Treasury Circular 570.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____
(Name of Contractor as Principal)

(Address of Contractor)

a _____
(corporation, partnership, or individual)

hereinafter called Principal, and

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the PUBLIC UTILITIES BOARD of the City of Brownsville, Texas, hereinafter called OWNER as Obligee, the penal sum of _____ Dollars (\$_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract with the OWNER, dated the ____ day of _____, 20____, a copy of which is hereto attached and made a part hereof, for the construction of the: **TOWN RESACA WATERSHED PROJECT.**

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for, or performing labor in the prosecution of the WORK provided for in such Contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK, whether by SUBCONTRACTORS or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to WORK to be performed thereunder, or the SPECIFICATIONS accompanying the same, shall in any wise 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, or to the WORK, or to the Specifications.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge any remaining, timely and legally perfected right of any lawful beneficiary hereunder, whose timely filed and legally perfected claim may be unsatisfied.

This Bond is subject to and governed Sections 2253.01 of the Texas Government Code (Vernon's Texas Codes Annotated) and Chapter 3503 of the Texas Insurance Code (VTCA), and all amendments thereto.

IN WITNESS WHEREOF, this instrument is executed in triplicate, each counterpart of which shall be deemed an original, this the ____ day of _____, 20__.

ATTEST: _____
(Principal)

(Principal) Secretary By: _____ (s)
(Signature)

(SEAL)

(Witness as to Principal) _____
(Address)

(Address) _____

ATTEST: _____
(Surety)

(Surety) Secretary By: _____
(Attorney-in-Fact)

(SEAL)

(Witness as to Surety) _____
(Address)

(Address) _____

NOTE: Date of PAYMENT BOND must not be prior to Effective Date (execution date by OWNER) of Contract. If Contractor is a Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing PAYMENT BONDS must be legally authorized by the Texas Board of Insurance to transact business in the State of Texas, and be currently listed as an approved federal surety in the most recently issued edition (prior to Contract's Effective Date) of the U. S. Treasury Circular 570.

ATTACH POWER OF ATTORNEY

INSERT CERTIFICATE OF INSURANCE

**GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

Prepared by
The Public Utilities Board of the City of Brownsville, Texas,
as a periodically reviewed and revised
Adaptation From the 1983 Base Document Prepared by

Engineers' Joint Contract Documents Committee

and originally

Issued and Published Jointly By:

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

CONSTRUCTION SPECIFICATION INSTITUTE

The base document from which this adaptation (Spring 2020 BPUB) was prepared
(1983 edition) was approved and endorsed by:

The Associated General Contractors of America

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GENERAL CONDITIONS

SCOPE. The Standard General Conditions of the Construction Contract prepared by the National Society of Professional Engineers (NSPE-1910-8, 1983 Edition) as periodically amended and adapted by the OWNER to meet local requirements, shall form a part of this Contract, together with the following Supplementary General Conditions. A copy of the locally amended Standard General Conditions (based upon NSPE-1910-8) is bound herewith. The following supplements modify, change, delete, or add to the General Conditions. Where any part of the General Conditions is modified or voided by any Supplementary General Conditions, the unaltered provisions of that part shall remain in effect.

ARTICLE 1. DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural, male and female thereof:

Addenda - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents. These Addenda are a part of the Contract Documents and modify the Drawings, Specifications or other bid documents as indicated. No verbal changes in the Work not depicted or described in writing shall be binding.

Supplements to, changes in, or corrections to the Drawings and/or Specifications issued in writing by OWNER during the period of bidding. These Addenda are a part of the Contract and modify the Drawings and/or Specifications as indicated. No verbal changes in the Work as shown or described shall become binding.

Agreement - The written and signed short-form Construction Agreement (Contract or Agreement) between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents including these General Conditions are attached to the Construction Agreement and made a part thereof as provided therein.

Alternates. Additions to; deletions from; or changes to requirements for the Project, each of which shall be bid separately and shall be included in or deleted/deducted from the Contract at the discretion of OWNER.

Application for Payment - The form developed by OWNER which is to be used by CONTRACTOR in requesting interim progress or final Contract payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid - The written offer or proposal of the bidder submitted on the OWNER prescribed form setting forth in figures and in script, the prices for the Work to be performed.

Bonds - Bid, Performance and Payment Bonds procured by the CONTRACTOR from a surety authorized by the Texas Department of Insurance to conduct business in the State of Texas, and any other instruments of security as may be specified by the OWNER.

Calendar Day –A calendar day consists of twenty-four hours and is measured from midnight, to the next midnight, and shall constitute a single calendar day. Calendar days include Saturdays and Sundays. THIS IS A CALENDAR DAY CONTRACT.

Change Order - A document developed by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision to the Work, or an adjustment in the Contract Price and/or the Contract Time, issued after the Effective Date of the Construction Agreement. Executed Change Orders are part of the amended Contract Documents.

Contract Documents – The Legal Notice and Invitation to Bid; Instructions to Bidder(s); Pre-Bid Disclosure Statements; Notice of Award; Notice to Proceed; The Construction Agreement; Addenda (which pertain to the Contract Documents); CONTRACTOR's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award); the Bid, Performance and Payment Bonds; these General Conditions; the Supplementary Conditions; the Specifications and the Drawings; and those documents enumerated in Article 7 of the Construction Agreement; and those outlined in paragraphs 3.4 and 3.5 of the General Conditions..

Contract Price - The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the General Conditions provisions of paragraphs 9.1 and 11.9.1 in the case of Unit Price Work).

Contract Time - The number of days (“calendar” days computed as provided in General Conditions paragraph 17.2) or the date specifically stated in the Agreement for the Substantial Completion of the Work.

CONTRACTOR - The person, firm or corporation with whom OWNER has entered into the Agreement to construct the Work.

Defective - An adjective which when modifying the word "Work" refers to "Work" that is unsatisfactory, faulty or deficient, or does not conform to, or comply with the Contract Documents, or does not meet the requirements of any inspection, referenced standard, test or approval referred to in the Contract Documents, or has been damaged prior to the time OWNER makes the final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with General Conditions paragraph 14.8 or 14.10).

Drawings - The drawings (plans) which depict the character, design, and scope of the Work to be performed and which have been prepared and/or approved by ENGINEER and are referred to in the Contract Documents.

Effective Date of the Agreement - The date indicated in the short-form Construction Agreement document upon which it becomes legally binding and effective, but if no such date is indicated, it means the date on which the Construction Agreement is signed by OWNER.

Engineer- The private, outside, independent professional engineering consulting firm(s) named as such in the Agreement.

Field Order - A written order issued by ENGINEER which orders minor changes or contains interpretations in the Work in accordance with General Conditions paragraph 9.5, but which does not involve a change in the Contract Price or the Contract Time.

Furnish. To supply at the Work jobsite the materials, supplies, equipment, etc., referred to in the Specifications and/or Drawings. Installation is not always required of the Supplier by the Specifications, but shall be performed or arranged for by the General CONTRACTOR.

General Requirements – Sections 01 10 00 to 01 60 00 Division 1 of the Specifications.

Laws and/or Regulations - Federal and/or State Laws, rules, administrative agency regulations, local ordinances, local codes and/or court orders applicable to the Work performance.

Notice of Award - The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Construction Agreement.

Notice to Proceed - A written notice given by OWNER to CONTRACTOR (with copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

OWNER'S Project Team (OPT) - The OWNER, OWNER'S Field Representative, ENGINEER, ENGINEER's Resident Project Representative, and the other entities identified in the Supplementary Conditions and the consultants, subconsultants, individuals or entities directly or indirectly employed or retained by them to provide services to the Owner.

OWNER - The City of Brownsville, acting through its Public Utilities Board (BPUB) of the City of Brownsville, Texas and its directly employed authorized representatives.

Partial Utilization - Placing a portion of the Work in service for the benefit of the OWNER and for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

Project – The construction of the Work to be provided to OWNER under the Contract Documents which may be the whole, or a part, as indicated elsewhere in the Contract Documents.

Provide – To furnish and install the materials, supplies, equipment, etc. referred to in the Specifications and/or Drawings, at the location shown or otherwise approved at the Project Work job-site.

Site Observers - Resident Project Representative - The authorized representative of ENGINEER who is assigned to periodically observe the Work at the site of the Project, or any part

thereof, on behalf of OWNER. OWNER'S Field Representative – the authorized representative of OWNER who observes the daily Work progress on behalf of OWNER. These two Representatives will coordinate with each other.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by, or for CONTRACTOR, to illustrate some portion of the Work, and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to ENGINEER, to illustrate material or equipment for some portion of the Work.

Special Conditions – Those portions of the Contract Documents unique to this Project and often mandated by third-party regulatory and funding authorities.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions for the design configuration and/or performance standard for materials, equipment, any specified construction systems, standards and workmanship, as applied to the Work and certain administrative details applicable thereto.

Standard Abbreviations. Wherever reference is made to standard specifications, standards of quality or performance, as established by a recognized national authority, the reference may be by initials and acronyms as generally recognized throughout the engineering and construction industries.

Subcontractor – An individual, firm or corporation having a direct contract with CONTRACTOR, or with any other Subcontractor (subtier), for the performance of a part of the Work at the Project site.

Substantial Completion - The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by its ENGINEER's definitive written and signed certificate of Substantial Completion, and that it is apparently sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the OWNER's purposes for which it is intended; or if there is no such certificate issued by ENGINEER, when final payment is due in accordance with General Conditions paragraph 14.13. The terms "Substantially Complete" and "Substantially Completed" as applied to any Work refer to the Substantial Completion thereof.

Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman or third-party vendor.

Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such manmade facilities or attachments, and any outer encasements containing such facilities (vaults, conduits) which have been installed underground to furnish/transport any of the following services or materials: electricity, gases, steam, liquid

petroleum products, telephone or other related data communications, cable television, sewage, storm drainage, traffic or other electronic control systems or potable water.

Unit Price Work - Work to be paid for on the basis of unit prices for ENGINEER/OWNER estimated quantities.

Work - The entire completed construction or the various separately identifiable parts thereof, required to be furnished by the CONTRACTOR under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction Project, all as required by the Contract Documents.

Work Directive Change - A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in General Conditions paragraph 4.2 or 4.3 or to emergencies under General Conditions paragraph 6.24. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in General Conditions paragraph 10.2.

Working Day. When and if applicable, a week day (Monday through Friday only, inclusive) in which weather conditions are such that Work can be performed in a normal manner. Weekends (Saturday, Sunday) and OWNER holidays shall not be considered working days.

Written Amendment - A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the non-engineering or non-technical (rather the commercial terms, legal provisions, etc.), rather than Work-related, aspects of the Contract Documents. Written Amendments are normally embodied in a Change Order once construction commences.

ARTICLE 2. PRELIMINARY MATTERS

Delivery of Bonds:

2.1 When CONTRACTOR delivers the triplicate original executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2 OWNER shall furnish to CONTRACTOR up to ten (10) copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished to CONTRACTOR, upon request, at the cost of reproduction reimbursable to OWNER.

Commencement of Contract Time; Notice to Proceed:

2.3 The Contract Time will commence to run and be accounted for on the date indicated in the Notice to Proceed. A Notice to Proceed may be given by OWNER at any time after the Effective Date of the Agreement. The CONTRACTOR should be prepared to perform Work as soon as Contract Time commences.

Starting the Project:

2.4 CONTRACTOR is obligated to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the Project site prior to the date on which the Contract Time commences to run per the Notice to Proceed.

Before Starting Construction:

2.5 Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby. CONTRACTOR shall be in **DEFAULT** to OWNER for failure to report to ENGINEER any obvious conflict, error, or discrepancy in the Contract Documents, if CONTRACTOR had actual knowledge thereof, or should reasonably have known thereof pursuant to customary construction industry standards.

2.6 Within ten (10) calendar days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1 an estimated Work Progress Schedule indicating the starting and completion dates of the various critical stages of the Work; and

2.6.2 a preliminary Schedule of Shop Drawing submissions; and

2.6.3 a preliminary Schedule of Values for all of the Work, which will include quantities and prices of items aggregating the total Contract Price and will subdivide the Work into logical component parts in sufficient detail to later serve as the basis for measuring actual Project progress and substantiating monthly payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be automatically confirmed in writing by CONTRACTOR at the time of submission to ENGINEER.

2.7 By the tenth (10th) calendar day after award of the Contract by OWNER, CONTRACTOR shall deliver to OWNER (with copy to ENGINEER) original certificates (and any other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with Article 5.

Preconstruction Conference:

2.8 After the Effective Date of the Agreement, but before CONTRACTOR starts the Work at the Project site, a mandatory conference attended by CONTRACTOR, ENGINEER, OWNER and others as appropriate, will be held to discuss the Schedules referred to in paragraph 2.6, to discuss procedures for managing exchanges of Shop Drawings and other submittals and for processing Applications for Payment; and to establish a working and pragmatic understanding among the Project participants as to the general progress and administration of the Work.

Finalizing Schedules:

2.9 At least ten (10) calendar days before submission of the first monthly Application for Payment, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to finalize the various Schedules submitted in accordance with Article 2.6. The finalized Progress Schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work, nor relieve CONTRACTOR from full responsibility therefore. CONTRACTOR acknowledges the ENGINEER has already included in the calculation of the performance calendar days agreed to by CONTRACTOR by its Bid submission in this calendar day Contract, normal non-compensable monthly rain days for Cameron County, Texas. The CONTRACTOR shall update this Progress Schedule no less than monthly at each payment submittal. The CONTRACTOR shall only include in the submittal any abnormal and unusual rain days that exceed those typically experienced in Cameron County, Texas, based upon historical monthly National Oceanic and Atmospheric Administration (NOAA) record averages (rain days will be verified by the ENGINEER and the Site Observers weekly), and any OWNER approved time extensions in the modified Progress Schedule. The amended monthly Work Progress Schedule shall be reviewed and accepted by the ENGINEER and the OWNER monthly as a pre-condition to payment to CONTRACTOR. The finalized Schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the exchange of submissions. The finalized Schedule of Values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1 The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of Cameron County, Texas.

3.2 It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required of CONTRACTOR to produce the OWNER'S intended result will be supplied by CONTRACTOR, whether or not specifically called for. When words which have a well-known

technical or trade meaning are used to describe Work, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, whether such reference is specific or by implication, shall mean the latest amended standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Construction Agreement, if there were no Bids for a specialty project), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR, ENGINEER or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER's subconsultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER in writing as provided in paragraph 9.4.

3.3 If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall immediately report same to ENGINEER in writing, and before proceeding with the Work affected thereby, shall obtain a written interpretation or clarification from ENGINEER. CONTRACTOR shall be in **DEFAULT** to OWNER for failure to report any obvious conflict, error or discrepancy in the Contract Documents if CONTRACTOR had actual knowledge thereof, or should reasonably have known thereof, pursuant to customary construction industry standards.

Amending and Supplementing Contract Documents:

3.4 The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following written ways:

- 3.4.1 a formal Written Amendment,
- 3.4.2 a Change Order (pursuant to definition and paragraph 10.4), or
- 3.4.3 a Work Directive Change (pursuant to definition and paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and Contract Time may only be changed by a Change Order or a Written Amendment.

3.5 In addition, the requirements of the Contract Documents may be supplemented and minor variations and deviations in the Work may be authorized in one or more of the following ways:

- 3.5.1 a Field Order (pursuant to definition and paragraph 9.5),
- 3.5.2 OWNER Engineer's approval of a Shop Drawing or sample (pursuant to

definition and paragraphs 6.25 through 6.30), or

3.5.3 OWNER Engineer's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.6 Neither CONTRACTOR, nor any Subcontractor (including sub-tier subcontractors) or Supplier, or other related person or organization performing or furnishing any of the Project Work to OWNER, shall have or acquire any title to, or ownership rights in, any of the Drawings, Specifications or other Contract Documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER, and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER, and specific written verification or adaptation by ENGINEER for a fee. All Drawings, Specifications or other Documents (or copies of any thereof) are upon completion of the Project to become the property of OWNER. Further use thereof without written consent of OWNER and ENGINEER is prohibited and solely at the risk of the user.

ARTICLE 4. AVAILABILITY OF LANDS: PHYSICAL CONDITIONS: REFERENCE POINTS

Availability of Lands:

4.1 OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way, licenses and easements for access thereto and such other lands which are specifically designated by OWNER for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER's furnishing of these lands, rights-of-way, licenses or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefore as provided in Article 12. CONTRACTOR may privately and separately provide at his own option and non-reimbursable cost, for any and all additional lands, and access thereto, that may be required for CONTRACTOR'S temporary construction facilities or storage of materials and equipment.

4.2 Physical Condition:

4.2.1 Explorations and Reports: Reference is made to the Supplementary Conditions for any identification of any reports of geotechnical explorations and tests of subsurface conditions at the Project site that may have been utilized by ENGINEER in preparation of the Contract Documents. Any of these geotechnical explorations and reports are expressly not part of these Contract Documents. CONTRACTOR may not rely upon the accuracy of the technical data contained in any such reports, nor upon non-technical data, interpretations or opinions contained therein or for the completeness thereof, for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to CONTRACTOR'S advanced, pre-bid exploration, testing and

determining any CONTRACTOR risk and cost associated with encountering any subsurface conditions at the Project site.

4.2.2 **Existing Structures:** Reference is made to the Supplementary Conditions for any identification of those Drawings of physical conditions in or relating to existing surface or subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the Project site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data actually contained in such drawings, but not for the current physical conditions or description completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to current locating, verification, investigation of, and encountering physical conditions in or relating to such structures.

4.2.3. **Report of Differing Conditions:** If CONTRACTOR believes that:

4.2.3.1 any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2 any physical condition uncovered or revealed at the Project site differs materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22), notify OWNER's Field Representative and ENGINEER's Resident Project Representative in writing about the inaccuracy or difference.

4.2.4 **ENGINEER's Review:** ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining any additional explorations or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5 **Possible Document Change:** If ENGINEER concludes that there is a material error in the Contract Documents, or that because of newly discovered, latent physical conditions, a change in the Contract Documents is required, a Work Directive Change or a Change Order may be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6 **Possible Price and Time Adjustments:** In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, may be allowable to the extent that they are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the financial impact or length thereof, a CONTRACTOR or OWNER claim may be made therefore as provided in Articles 11 and 12. All increases or decreases in the Contract Price shall be governed by all State and local statutes, codes, laws, ordinances, rules and regulations governing public competitive bidding and Change Orders.

Physical Conditions

4.3 Underground Facilities:

4.3.1 **Shown or Indicated:** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Project site is only based on existing available information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, (Non-OWNER utilities, pipeline companies, railroads, etc.) or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1 OWNER and ENGINEER shall not be responsible for the actual current conditions, accuracy or completeness of any such third-party information or data; and,

4.3.1.2 CONTRACTOR shall have full responsibility before commencement of related Work for reviewing and checking all such current information and data; for locating all actual current Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction; for the safety and protection thereof as provided in paragraph 6.20 and; paying for the repair of any damage thereto resulting from the Work; the cost of all of which is mutually considered between OWNER and CONTRACTOR as having been included in the CONTRACTOR'S original Contract Price.

4.3.2 Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the Project site which was not shown or indicated in the Contract Documents, and which CONTRACTOR could not reasonably have been expected to be aware of under customary construction industry standards, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document any consequences of the existence of the Underground Facility, and the Contract Documents may be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents, and which CONTRACTOR could not reasonably have been expected to be aware of pursuant to customary construction industry standards. If the parties are unable to agree as to the financial impact or length thereof, CONTRACTOR may make a claim therefore as provided in Articles 11 and 12. All increases or decreases in the Contract Price shall be governed by all State and local statutes, codes, laws, ordinances, rules and regulations governing public competitive bidding and Change Orders.

Reference Points:

4.4. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified by OWNER in the General Requirements), and shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of ENGINEER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and CONTRACTOR shall be responsible for the accurate replacement or relocation of such reference points by CONTRACTOR-retained professionally qualified personnel (not including OWNER or ENGINEER representatives).

ARTICLE 5. BONDS AND INSURANCE

Performance and Payment Bonds:

For a Contract in excess of \$100,000.00, a Performance Bond shall be procured and executed by CONTRACTOR in the full amount of the Contract Price conditioned upon the faithful performance of the Work for OWNER in accordance with the Plans, Specifications and Contract Documents. Said Bond shall be solely for the protection of the OWNER.

For a Contract in excess of \$50,000.00, a Payment Bond shall be executed in the full amount of the Contract Price, for the primary protection of all claimants against the surety for non-payment in supplying labor, materials and equipment in the prosecution of the Work provided for in the Contract, for the use of each such claimant timely perfecting a proper claim against surety.

5.1 CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance of the Work for OWNER and payment of all CONTRACTOR's labor, materials, equipment and supply obligations under the Contract Documents. **These Bonds shall remain in effect by CONTRACTOR at least until one year after the date when final payment becomes due**, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish any such other bonds as may be required by the Supplementary Conditions (e.g. any maintenance, extended warranty, special indemnity, etc.). All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are authorized to do business in the State of Texas. All Bonds signed by an agent ("attorney in fact") must be accompanied by a certified copy of the authority to act on behalf of the surety.

5.2 If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent, or its right to do business in Texas is terminated or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five (5) calendar days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.

Contractor's Liability Insurance:

5.3 CONTRACTOR shall purchase and maintain such commercial general liability and other insurance coverages as are appropriate for the Work being performed and furnished, and as

will provide protection from claims set forth below which may arise out of, or result from, CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents; whether it is to be performed or furnished by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work; or by anyone for whose acts and/or omissions any of them may be liable:

5.3.1 Claims under workers' compensation, disability benefits and other similar employee benefit acts. This is a Texas public works Contract and any CONTRACTOR'S or Subcontractor's attempted rejection of the worker's compensation act, and thereby substituting a CONTRACTOR'S or Subcontractor's self-insurance reserve, is specifically prohibited by Texas law.

5.3.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees traditionally covered by employer's liability insurance;

5.3.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.3.4 Claims for damages insured by personal injury liability coverage which are sustained: (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR; or (b) by any other person for any other reason;

5.3.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom;

5.3.6 Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

5.3.7 Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any owned or hired motor vehicle.

The various insurance coverages required by this Article 5 shall include the specific type coverage and be underwritten for not less than the limits of liability and coverage amounts provided herein below or in the Supplementary Conditions, or required by law, whichever is greater. The commercial general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall be of an "occurrence"-type, when applicable, and shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least (30) thirty days prior written notice has been given to OWNER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two (2) years after final payment and furnish OWNER with evidence of

continuation of such insurance at final payment and one year thereafter. Insurance coverage furnished under the Contract Documents (except for Workmen's Compensation and any professional engineering errors and omissions liability insurance that CONTRACTOR or his agent might carry applicable to this Project) shall include the City of Brownsville and BPUB as OWNER, and their respective City Commissioners, public officials, officers, Board Members, and employees, as named additional insureds and hereinafter known as "additional insureds."

The following entities are to also be specifically named as additional insureds:

1. City of Brownsville, Texas
Attn: City Secretary Griselda Rosas
City Plaza, First Floor
1034 E. Levee St.
Brownsville, Texas 78520

2. Brownsville Public Utilities Board
1425 Robinhood Drive
Brownsville, TX 78521

Contractual Liability Insurance:

5.4 The commercial general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's INDEMNITY obligations under paragraphs 6.32 and 6.33.

5.5 Specific Coverages of Insurance Required by Owner:

5.5.1 Workmen's Compensation and Employer's Liability. This insurance shall protect the laborer, and insure the CONTRACTOR, and insulate the additional insureds, against all claims under applicable Texas workmen's compensation laws, pursuant to subparagraph 5.3.1. The additional insureds shall also be protected under an Employer's Liability policy 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 Employer's Liability policy shall include an "all states" endorsement.

5.5.2. **Mandatory TWCC Rule 28 TAC Sect. 110.110 Adapted Language**

(A) **Definitions:**

Certificate of coverage ("certificate") - A copy of a certificate of insurance, or a coverage agreement, showing statutory workers' compensation insurance coverage for the person's or entity's (CONTRACTOR's) employees providing services on this public works Project, for the duration of this Project.

"Duration of the Project" - includes the time from the beginning of the Work on this Project until the CONTRACTOR's/person's Work on this Project has been completed and accepted by the OWNER.

“Persons providing services on the Project” (“subcontractor” in § 406.096) - includes all persons or entities performing all or part of the services the CONTRACTOR has undertaken to perform on this Project, regardless of whether that person contracted directly with the CONTRACTOR and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on this Project.

"Services" - include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to this Project.

- (B) The CONTRACTOR shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, § 401.011(44) for all employees of the CONTRACTOR providing services on this Project, for the duration of this Project.
- (C) The CONTRACTOR must provide a certificate of coverage to the OWNER prior to being awarded the Contract.
- (D) If the coverage period shown on the CONTRACTOR'S current certificate of coverage ends during the duration of this Project, the CONTRACTOR must, prior to the end of the coverage period, file a new certificate of coverage with the OWNER showing that coverage has been extended.
- (E) The CONTRACTOR shall obtain from each person providing services on this Project, and provide to the OWNER:
 - (1) a certificate of coverage, prior to that person beginning Work on this Project, so the OWNER will have on file certificates of coverage showing coverage for all persons providing services on this Project; and
 - (2) no later than seven (7) calendar days after receipt by the CONTRACTOR, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of this Project.
- (F) The CONTRACTOR shall retain all required certificates of coverage for the duration of this Project and for three (3) years thereafter.
- (G) The CONTRACTOR shall notify the OWNER in writing by certified mail or personal delivery, within ten (10) calendar days after the CONTRACTOR knew or should have known, of any change that materially affects the provision of coverage

of any person providing services on this Project.

- (H) The CONTRACTOR shall post on this Project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on this Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.
- (I) The CONTRACTOR shall contractually require each person with whom it contracts to provide services on this Project, to:
 - (1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, § 401.011(44) for all of its employees providing services on this Project, for the duration of this Project;
 - (2) provide to the CONTRACTOR, prior to that person beginning Work on this Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on this Project, for the duration of this Project;
 - (3) provide the CONTRACTOR, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of this Project;
 - (4) obtain from each other person with whom it contracts, and provide to the CONTRACTOR:
 - (a) a certificate of coverage, prior to the other person beginning Work on this Project; and
 - (b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of this Project;
 - (5) retain all required certificates of coverage on file for the duration of this Project and for three (3) years thereafter;
 - (6) notify the OWNER in writing by certified mail or personal delivery, within ten (10) calendar days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on this Project; and
 - (7) contractually require each person with whom it contracts, to perform as

required by clauses (I)-(1-7) of this subparagraph, with the certificates of coverage to be provided to the person for whom they are providing services.

- (J) By signing this Contract or providing or causing to be provided a certificate of coverage, the CONTRACTOR is representing to the OWNER that all employees of the CONTRACTOR who will provide services on this Project will be covered by workers' compensation coverage for the duration of this Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier. Providing false or misleading information may subject the CONTRACTOR to administrative penalties, criminal penalties, civil penalties, or other civil actions.
- (K) The CONTRACTOR's failure to comply with any of these provisions is a breach of Contract by the CONTRACTOR which entitles the OWNER to declare the Contract void if the CONTRACTOR does not remedy the breach within ten (10) calendar days after receipt of notice of breach from the OWNER.

The liability limits shall not be less than:

| | |
|------------------------|------------------------------|
| Workmen's compensation | Texas Statutory Limits |
| Employer's liability | \$100,000.00 each occurrence |

5.5.3 Comprehensive Business Automobile Liability. This insurance shall be written in comprehensive business form and shall protect the CONTRACTOR and the additional insureds against all claims described under Section 5.3.7. of the General Conditions of the Contract Documents and arising from the use of motor vehicles, and shall cover, on or off the Project site, 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 and property damage | \$500,000.00 combined single limit each occurrence |
|-----------------------------------|--|

5.5.4 Commercial General Liability. This insurance shall be an "occurrence" type policy written in commercial form and shall protect the CONTRACTOR and the additional insureds against all claims described in Sections 5.3, 5.3.3., 5.3.4., 5.3.5., 5.3.6, 5.4 of the General Conditions of the Contract Documents arising out of any intentional or negligent act and/or omission of the CONTRACTOR or his agents, employees, or subcontractors. This policy shall also include protection against claims insured by usual personal injury liability coverage.

The liability limits shall not be less than:

| | |
|-------------------------------------|--|
| Personal Injury and property damage | \$1,000,000.00 combined single limit each occurrence and |
|-------------------------------------|--|

and \$1,000,000.00 aggregate

If the CONTRACTOR'S Work, or Work under his direction, requires blasting, explosive conditions, or underground operations, the commercial general liability coverage shall contain no exclusion relative to blasting, exploding, collapse of structures, or damage to underground property.

5.5.5 Excess Umbrella Liability Policy. This insurance shall protect the CONTRACTOR and the additional insureds against all claims in excess of the limits provided under the employer's liability, comprehensive business automobile liability, and commercial general liability policies. The liability limits of the umbrella policy shall not be less than \$2,000,000.00. The policy shall be an "occurrence" type policy.

5.5.6 Transportation Insurance. This insurance shall be of the "all risks" type and shall protect the CONTRACTOR and the OWNER from all insurable risks of physical loss or damage to equipment and materials in transit to the Project jobsite and until the OWNER receives the equipment and materials at the Project jobsite. The coverage amount shall be not less than one-half of the full amount of the total Contract Price.

Transportation insurance shall provide for losses to be payable to the CONTRACTOR and the OWNER as their respective legal interests may appear.

5.5.7 All policies required under paragraph 5.5 herein shall contain a "cross liability" or "severability of interest" clause or endorsement. Notwithstanding any other provision of these policies, the insurance afforded shall apply separately to each insured, named insured, or additional insured with respect to any claim, suit, or judgment made or brought by or for any other insured, named insured, or additional insured, as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount or amounts for which the insurer would have been liable had only one insured been named.

5.5.8 CONTRACTOR shall require each of his Subcontractors to procure and maintain during the life of his subcontract, Subcontractor's Commercial General Liability and Property Damage Insurance of the type specified in subparagraphs 5.5.1, 5.5.2, 5.5.3, 5.5.4 and paragraph 5.6 hereof, in the same amounts as required by OWNER for CONTRACTOR, unless alternative amounts are approved in writing by OWNER.

5.5.9 The insurance required under subparagraphs 5.5.1, 5.5.2, 5.5.3, 5.5.4 and paragraph 5.6 hereof shall provide adequate protection for CONTRACTOR and his Subcontractors respectively against damage claims which may arise from operations under this Contract, whether such operation is by the insured or by anyone directly or indirectly employed by him, and also, against any special hazards which may be encountered in the performance of this Contract.

5.5.10 CONTRACTOR shall not commence any Work under this Contract until he has obtained all the insurance coverage required under this Article 5. and such insurance has been approved by OWNER; nor shall CONTRACTOR allow any Subcontractor to commence Work on this Contract until the insurance required by the Subcontractor has been so obtained and

approved.

Property Insurance:

5.6 Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain property insurance upon the Work at the Project site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions, established by current customary construction industry standards given the type of Work in Cameron County, Texas and value thereof, or as may be required by Laws and Regulations). This insurance shall include the interests of OWNER, CONTRACTOR, and Subcontractors, in the Work, all of whom shall be listed as insured or additional insured parties, which shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions (e.g. flood, wind, etc.); and shall include damages, losses and expenses arising out of or resulting from any insured loss or cost incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment. The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with this paragraph shall be of an "occurrence"-type, when applicable, and contain a provision that the coverage afforded will not be canceled or materially changed until at least (30) thirty calendar days prior written notice has been given to OWNER by certified mail.

5.6.1 Property Insurance Coverage. This insurance shall protect CONTRACTOR and the additional insureds against all claims described in Section 5.6 and shall provide the following minimum amounts:

Property Insurance Coverage: Provide Full Contract Price Amount or \$100,000.00 Minimum, whichever is greater.

Waiver of Rights:

5.7 Waiver

5.7.1 CONTRACTOR waives all rights against OWNER, (unless OWNER or other named entities as additional insureds were solely negligent), for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraph 5.6 and any other property insurance applicable to the Work, and also waives all such rights against all other entities named as additional insureds in such policies for losses and damages so caused. As required by paragraph 6.12, each subcontract between CONTRACTOR and a Subcontractor will contain similar "flow down" waiver provisions by the Subcontractor in favor of CONTRACTOR, OWNER, ENGINEER and their respective sub-consultants, and all other entities named as additional insureds.

5.7.2 CONTRACTOR intends that any policies provided in response to paragraph 5.6 shall protect all of the entities insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage, the insurer will have no rights of recovery against any of the entities named as insured or additional insured, and if the insurers require separate waiver forms to be signed by any Subcontractor, CONTRACTOR will obtain the same.

Acceptance of Insurance:

5.8 If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3, 5.4, 5.5 and 5.6 on the basis of the coverages not complying with the Contract Documents, OWNER will attempt to notify CONTRACTOR in writing thereof within ten (10) calendar days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. CONTRACTOR shall provide to the OWNER such additional information regarding the insurance provided by CONTRACTOR as the OWNER may reasonably request. Failure on the part of the OWNER or its agents to detect an insurance deficiency as compared to the insurance requirements of the Contract shall not constitute a waiver by the OWNER of the insurance requirements which CONTRACTOR and/or Subcontractor must contractually meet to be in compliance herewith.

Partial Utilization - Property Insurance:

5.9 If OWNER finds it necessary to occupy, use, or operate a portion or portions of the Work prior to Substantial Completion of all the Work, such use, occupancy or operation may be accomplished in accordance with paragraph 14.10. CONTRACTOR shall have the obligation to inform the insurers of OWNER's intent to so occupy, use or operate a portion or portions of the Work. The insurers of CONTRACTOR providing the property insurance shall consent to such use, occupancy or operation by endorsement on the policy or policies, but the property insurance shall not be canceled or lapse on account of any such partial use, occupancy, or operation by OWNER.

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1 CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents and customary construction industry standards. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, procedures, safety and quality control of construction, but CONTRACTOR shall not be responsible for any negligence of others in any design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be solely responsible to guarantee that the

finished Work complies accurately with the Contract Documents and CONTRACTOR shall not rely upon the OWNER's and/or ENGINEER'S construction observation to accomplish same.

6.2 CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER, except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given directly to CONTRACTOR.

Labor, Materials and Equipment:

6.3 CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work, oversee quality control, monitor safety, and perform construction of the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Project site. Except in connection with the safety or protection of persons or the Work or property at the Project site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the Project site shall be performed during regular daily working hours (generally eight (8) hours between 7:00 A. M. and 6:00 P.M.) as may be specifically set forth by the OWNER, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's advanced written consent. Preference employment shall be given to resident citizens of the Cameron County, Texas area where such persons are available and fully qualified to perform the Work to which the employment relates.

6.3.1 CONTRACTOR shall acquaint himself with all matters and conditions concerning the Project site and any existing construction. Any practical and constructive criticism or exception regarding any feature of the Work must be presented in writing to OWNER at least ten (10) calendar days prior to bidding. After the Contract Agreement to perform the Work has been signed by CONTRACTOR, it shall then be his responsibility to provide satisfactory Work that will meet the full intent of the Contract Documents. CONTRACTOR shall then pursue this Work with the other trades so that all phases of the Work may be properly coordinated without delays or damage to any parts of the Work.

6.4 Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.4.1 CONTRACTOR shall provide and maintain suitable weather-tight, washable, sanitary toilet facilities for all workmen for the entire construction period. CONTRACTOR shall comply with all requirements of applicable health authorities. When toilet facilities are no longer required, promptly remove them from the Project site, disinfect and clean the surface area as required. CONTRACTOR shall keep each toilet facility swept and supplied with toilet tissue at all times.

6.5 All materials and equipment shall be of good quality and new, except as otherwise specifically provided in the Contract Documents. Sometimes a project specification may require salvage and reinstallation of OWNER's recently acquired machinery and equipment pre-existing at a project site. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment procured for the Project. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier, except as otherwise provided in the Contract Documents; but no provision of any such Supplier instructions will be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

6.6 CONTRACTOR shall notify OWNER and ENGINEER in writing of any conflict between the manufacturer's directions and the Contract Documents and shall not perform any Work on any item until such conflict has been resolved. Upon award of the Contract, CONTRACTOR will secure a certificate of exemption from the Texas State Comptroller to preserve the OWNER's exemption from Limited Sales, Excise and Use Tax in an amount representing that part of the total Contract Price representative of the value of tangible personal property to be physically incorporated into the Project realty. The certificate of exemption must contain a statement to the effect that such materials or property have been, or will be, utilized in the performance of the Contract to the full extent of the amount for which a certificate of exemption is requested.

6.6.1 Except where otherwise specified, CONTRACTOR shall, at all times, provide protection against weather, so as to maintain all Work, materials and fixtures free from injury or damages. All new Work likely to be damaged by weather shall be covered or otherwise protected as required.

6.6.2 While it is appreciated that CONTRACTOR has to maintain continuous construction operations and sequences, it should be understood that the OWNER's electric, gas, water, wastewater production and distribution systems must function during the Contract period with a minimum of inconvenience to the OWNER's customers and the OWNER. Requirements of the: Texas Commission on Environmental Quality (TCEQ); Texas Railroad Commission (TRC); Electric Reliability Council of Texas (ERCOT); and the State and federal regulatory agencies having jurisdiction over the Project site, must be met by CONTRACTOR. It is therefore incumbent on CONTRACTOR to plan ahead on the basis of integrating his construction sequencing program as far as possible into the normal operating sequence of the various utility systems to avoid or minimize disruption of services. No departure from the normal operating sequence of the utility systems will be allowed, except with the specific advanced written agreement of OWNER.

6.6.3 CONTRACTOR shall notify OWNER and ENGINEER in writing a minimum of forty-eight (48) hours in advance of any Work which will be tied into the existing utility systems. Method of tie-in shall be submitted to ENGINEER for his approval prior to any Work being performed. At no time shall contaminated water that has not been disinfected be

allowed to seep into any existing waterlines, and at no time shall sewage be allowed to flow into surrounding Project areas. Connections will be made during times of daily minimum sewage flows, if required by Project.

6.6.4 CONTRACTOR shall coordinate his Work with that of other contractors whose work may occur at a conflicting time and location. The coordination shall be such that CONTRACTOR's Work will be maintained at a normal rate. Any priority of contractors' performance disputes will be decided by OWNER, after consultation with ENGINEER.

6.6.5 All Work that is performed on, across or along International Boundary and Water Control Commission levees must conform to all I.B. & W.C.C. requirements. All Work performed on, across or along Brownsville Irrigation and Drainage District or the Cameron County Water Control and Improvement District No.16 canals or ditches must conform to all District requirements.

6.6.6 Satisfactory access or detour roads shall be provided by CONTRACTOR where necessary due to his construction.

6.6.7 If required by the Bid or Project Specifications, or by law for the type of excavation construction being performed, CONTRACTOR and his Registered Professional Engineer shall develop the Trench Safety System Plan and shall provide any necessary shoring, bracing and/or sheeting pursuant to Section 756.023 of the Texas Health and Safety Code and OSHA 29 C.F.R. 1926, Subpart P, Vol. 54 No. 209 of the Federal Register, October 31, 1989, pp. 45959-45991, and, as provided in Section 11 - "Trench Excavation and Shoring Safety Plan" of the OWNER's Standard Specifications.

6.6.8 CONTRACTOR shall routinely provide adequate barricades and warning devices in conformance with the guidelines for Traffic Control as established by the Texas Department of Transportation (TDOT) in the Texas Manual on Uniform Traffic Control Devices (TMUTCD). This provision shall be incidental and subsidiary to the rest of the Work in this Contract, and shall not constitute a separate CONTRACTOR pay item.

6.6.9 CONTRACTOR shall provide to OWNER the services of technical representative(s) from Supplier(s) for CONTRACTOR furnished equipment, for a sufficient period of time to assist in start-up and initial adjustment of all installed or delivered equipment, and to train, advise and consult with OWNER's operating personnel, if appropriate for the Project.

6.6.9.1 For each mechanical system, CONTRACTOR shall provide to OWNER a written certification from the manufacturer's representative that the products of the manufacturer have been installed by CONTRACTOR in conformance with the manufacturer's requirements and recommendations.

6.6.10 All items of equipment required for this Contract shall be Bid to provide as part of the Contract Price, any literature explaining "Operation and Maintenance" (O&M) of that item of equipment. If a manufacturer does not print such a standard O&M manual, CONTRACTOR shall develop and provide OWNER with a customized manual approved in

writing by the manufacturer.

Adjusting Progress Schedule:

6.7 CONTRACTOR shall submit to ENGINEER for the Project record and acceptance only, and not approval or concurrence to the extent indicated in paragraph 2.9, periodic adjustments in the Progress Schedule to reflect the impact thereon of new Project developments; these revised Schedules will conform generally to the Progress Schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or "Or-Equal" Items:

6.8

6.8.1 As a general rule, the OWNER and ENGINEER prefer all determinations regarding proposed Substitutions of materials or equipment as potential "or-equal-items" be resolved during the pre-Bid phase. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item, or the name of a particular Supplier, the naming of the item is intended to establish the type, function, performance standard and quality required. In some instances, the OWNER, after consultation with ENGINEER, is legally allowed to "sole source" a specific material or component of equipment when its design and/or performance is required to integrate with a larger OWNER system that will remain in place, or that OWNER has an inventory of spare parts for, or that OWNER has a long favorable, performance reliability history with. Unless the material or equipment name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers generally may be accepted by ENGINEER, if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent, or equal to, that named by ENGINEER. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying in writing that the proposed substitute will adequately perform the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The CONTRACTOR'S written application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for any other work on the Project by other contractors) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any vendor license fee or royalty. All variations of the proposed substitute from that specified will be identified in the CONTRACTOR'S written application and available maintenance, repair and replacement parts and service will be indicated. The CONTRACTOR'S written application will also contain an itemized estimate of all costs or savings that will result directly or indirectly from acceptance of such substitute, including costs of redesign, operation, performance, and potential claims or protests of other contractors

affected by any resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's non-compensable expense additional data about the proposed substitute.

6.8.2 If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may generally furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient written information to allow ENGINEER to determine that the substitute proposed can be legally utilized by CONTRACTOR (e.g. patented or licensed processes) and is equivalent to that indicated or required by the Contract Documents. OWNER may have similar legal rights to "sole source" as generally indicated above in paragraph 6.8.1. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.8.1 above, as applied by ENGINEER and as may be supplemented in the General Requirements.

6.8.3 ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's non-compensable expense, a special performance guaranty bond or other form of surety with respect to any accepted substitute. ENGINEER will record time required by ENGINEER and any ENGINEER's outside technical consultants in evaluating substitutions proposed by CONTRACTOR and in making any required changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and any ENGINEER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

6.9

6.9.1 CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.9.2 The Pre-Bid documents require the CONTRACTOR to identify Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of material and equipment), to be submitted to OWNER at the time of bidding. OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto) of any such Subcontractor, Supplier or other person or organization so identified by CONTRACTOR may be revoked by OWNER or ENGINEER on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. The Contract Price may be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order or written Amendment may be executed by the OWNER and

CONTRACTOR. All increases or decreases in the Contract Price shall be governed by all State and local statutes, codes, laws, ordinances, rules and regulations governing public competitive bidding and maximum Change Order limits. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject any defective or non-compliant Work.

6.10 CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and/or omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct contract or indirect relationship with CONTRACTOR, just as CONTRACTOR is responsible to the OWNER for CONTRACTOR's own acts and/or omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, subtier subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER to pay or to supervise the payment of any moneys due any such Subcontractor, subtier subcontractor, Supplier or other person or organization, except as may otherwise be required by Laws and Regulations.

6.11 The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.12 All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate written agreement between CONTRACTOR and the Subcontractor, which specifically binds the Subcontractor through appropriate "flow down" provisions, to the applicable terms and conditions of the Contract Documents for the benefit of OWNER, and contains waiver provisions as required by paragraph 5.7.

Patent Fees and Royalties:

6.13 CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device, which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work, and if to the actual knowledge of OWNER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. **CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE CITY OF BROWNSVILLE AND THE BROWNSVILLE PUBLIC UTILITIES BOARD, INCLUDING THEIR RESPECTIVE COMMISSIONERS, BOARD MEMBERS OFFICERS AND EMPLOYEES (INDEMNITEES) AGAINST ANY CLAIMS, DAMAGES, LOSSES AND EXPENSES (INCLUDING ATTORNEYS' FEES AND COURT COSTS) ARISING OUT OF ANY INFRINGEMENT OF PATENT RIGHTS OR COPYRIGHTS INCIDENT TO THE USE IN THE PERFORMANCE OF THE WORK OR RESULTING FROM THE INCORPORATION IN THE WORK OF ANY INVENTION, DESIGN, PROCESS, PRODUCT OR DEVICE NOT SPECIFIED IN THE CONTRACT DOCUMENTS, AND SHALL DEFEND ALL SUCH CLAIMS IN CONNECTION WITH ANY ALLEGED INFRINGEMENT OF SUCH RIGHTS. IT IS THE EXPRESSED**

INTENTION OF THE PARTIES HERETO THAT THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH IS INDEMNITY BY CONTRACTOR TO INDEMNIFY AND PROTECT INDEMNITEES FROM THE CONSEQUENCES OF OWNER'S OWN NEGLIGENCE WHERE THAT NEGLIGENCE ON THE PART OF THE OWNER IS A CONCURRING CAUSE OF THE CLAIMS, DAMAGES, LOSSES, AND EXPENSES REFERENCED ABOVE. FURTHERMORE, THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH SHALL HAVE NO APPLICATION TO ANY CLAIM, DAMAGE, LOSS AND EXPENSE REFERENCED ABOVE WHERE SUCH RESULTS FROM THE SOLE NEGLIGENCE OF THE OWNER INDEPENDENT OF THE FAULT OF ANY OTHER PERSON OR ENTITY.

Permits:

6.14 Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids. CONTRACTOR shall pay all charges of utility owners with the exception of those normally charged by OWNER, for connections to the Work, and OWNER shall pay all charges of such third-party utility owners for facility capital costs related thereto such as impact fees or plant investment fees, if any.

6.14.1 Fires shall not be built on the Project premises except by the express consent of OWNER and Brownsville City and/or County Fire Marshall.

Laws and Regulations:

6.15

6.15.1 CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, OWNER shall not be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.15.2 If CONTRACTOR has actual knowledge that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by OWNER by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing, or having reason to know, that it is contrary to such Laws or Regulations, and without such advanced written notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's original and primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

6.16 "Pursuant to 34 Texas Administrative Code 3.291, in order for the OWNER to

continue to benefit from its status as a State Sales and Use Tax Exempt Organization, after August 14, 1991 public works construction contracts must be awarded on a "separated contract" basis. A "separated contract" is one where the CONTRACTOR distinguishes in writing prior to starting Work, between the value of the tangible personal property (materials such as pipe, bricks, lumber, concrete, paint, etc.) to be physically incorporated into the Project real estate from the total Contract price. Under the "separated contract" format, the CONTRACTOR in effect becomes a "seller" to the OWNER of materials that are to be physically incorporated into the Project real estate. As a "seller", the CONTRACTOR will issue a "Texas Certificate of Resale" to the CONTRACTOR'S supplier in lieu of paying the sales tax on the Project materials at the time of purchase. The CONTRACTOR will also issue a "Certificate of Exemption" to the supplier, demonstrating that the personal property is being purchased for resale and that the resale is to a public owner, the City of Brownsville, Texas, and its BPUB, which are sales tax exempt entities under UTCA Tax Code Section 151.309(5). CONTRACTOR should be careful to consult the most recent guidelines of the Texas State Comptroller of Public Accounts regarding the sales tax status of supplies and equipment that are used and consumed during Project Work (e.g. gas, oil, fluids, rental equipment, etc.), but that are not physically incorporated into the Project real estate. Such items are generally not tax exempt. If the CONTRACTOR has questions about the implementation of this policy he is asked to inquire with the State Comptroller of Public Accounts, Tax Administration Division, State of Texas, Austin, Texas 78774. The CONTRACTOR will not include any federal taxes in Bid prices since the OWNER is exempt from payment of such taxes. "Texas Certificates of Exemption", "Texas Certificates of Resale" and "Texas Sales Tax Permits" are forms available to the CONTRACTOR through the regional offices of the Texas State Comptroller of Public Accounts."

6.16.1. On the last page of the Construction Agreement a blank is provided for the CONTRACTOR to fill in an amount in dollars and cents indicating the Bid price of all materials and other tangible personal property included in the total Bid that will be physically incorporated into the Project real estate. The amount to be filled in by CONTRACTOR has reference to all of such materials and other tangible personal property as will actually be physically incorporated into the final result of the Work covered by the Contract. "Tangible personal property" means personal property which may be seen, weighed, measured, felt or touched, or which is in any other manner perceptible to the senses.

6.16.2. Upon award of the Contract, OWNER will, on written request of CONTRACTOR, furnish CONTRACTOR with a certificate of exemption from the Texas Limited Sales, Excise and Use Tax in only an amount not exceeding the above mentioned bid price for materials and other tangible personal property that will be physically incorporated into the Project real estate. Such written request by CONTRACTOR must contain a statement to the effect that such materials or property will be utilized in the performance of the Contract, to the full extent of the amount for which a certificate of exemption is requested. The Texas Comptroller of Public Accounts often audits contractors regarding compliance with these paragraph 6.16 provisions.

Use of Premises:

6.17 CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents, or otherwise privately acquired by the CONTRACTOR, and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements. CONTRACTOR shall assume full responsibility for any damage to any Project land or area, and to the owner or occupant of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER by any such adjacent owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement, or otherwise resolve the claim by mediation, arbitration or at law. **CONTRACTOR SHALL INDEMNIFY, AND HOLD HARMLESS THE CITY OF BROWNSVILLE AND THE BPUB INCLUDING THEIR RESPECTIVE COMMISSIONERS, BOARD MEMBERS OFFICER'S AND EMPLOYEES (INDEMNITEES) FROM AND AGAINST ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES (INCLUDING, BUT NOT LIMITED TO, FEES OF ENGINEERS, ARCHITECTS, ATTORNEYS AND OTHER PROFESSIONALS AND COURT COSTS) ARISING DIRECTLY, INDIRECTLY OR CONSEQUENTIALLY OUT OF ANY ACTION, LEGAL OR EQUITABLE, BROUGHT BY ANY SUCH OTHER THIRD PARTY ENTITY AGAINST OWNER, TO THE EXTENT BASED ON A CLAIM ARISING OUT OF CONTRACTOR'S NEGLIGENT PERFORMANCE OF THE WORK. IT IS THE EXPRESSED INTENT OF THE PARTIES HERETO THAT THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH IS INDEMNITY BY CONTRACTOR TO INDEMNIFY AND PROTECT THE INDEMNITEES FROM THE CONSEQUENCES OF THE INDEMNITEES' OWN NEGLIGENCE, WHEN THAT NEGLIGENCE ON THE PART OF THE INDEMNITEES IS A CONCURRING CAUSE OF THE INJURY, DEATH OR DAMAGE.**

FURTHERMORE, THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH SHALL HAVE NO APPLICATION TO ANY CLAIM, LOSS, DAMAGE, CAUSE OF ACTION, SUIT, AND LIABILITY WHERE THE INJURY, DEATH OR DAMAGE RESULTS FROM THE SOLE NEGLIGENCE OF THE INDEMNITEES, INDEPENDENT OF THE FAULT OF ANY OTHER PERSON OR ENTITY.

6.18 During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, CONTRACTOR shall remove and legally dispose of all waste materials, rubbish and debris from and about the premises, as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the Project site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.19 CONTRACTOR shall be confined to all working real estate and easements provided by OWNER, unless CONTRACTOR separately and privately secures at his own non-reimbursable cost, additional private temporary construction easements. Generally, storage of excavation material and all CONTRACTOR equipment and material shall remain within the limits of Project and working easements.

6.20 CONTRACTOR shall not weight load or permit any part of any structure or utility to be loaded in any manner that will endanger the structure or utility, nor shall CONTRACTOR subject any part of the Work or adjacent property to surcharge stresses or pressures, or loss of subjacent or lateral support, that will endanger it.

Record Documents:

6.21 CONTRACTOR shall as a precondition to interim monthly progress payments, show evidence of regularly maintaining and updating and storing in a safe place at the Project site, one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and any written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and periodically annotated to show all changes made by CONTRACTOR during construction. These periodically updated record documents, together with all approved samples and a counterpart of all approved Shop Drawings, will be at all times available to ENGINEER for on-site reference. Upon completion of the Work, these record documents, samples and Shop Drawings, will be delivered to ENGINEER for OWNER record retention.

Safety and Protection:

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

6.22.1 other persons and organizations who may be required to properly visit the Project site;

6.22.2 all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Project site; and

6.22.3 other property at the Project site or adjacent thereto, including drainage gradients, trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

6.22.4 Driveways, culverts, storm sewer inlets and laterals, and other public or private property that is destroyed or removed during the construction shall be replaced to its original or better condition by CONTRACTOR. Temporary drainage and any subgrade dewatering is to be provided by CONTRACTOR in the total Contract Price as necessary to protect and complete the Work.

6.22.5 CONTRACTOR is responsible for locating any underground obstacles. It is not represented by OWNER or ENGINEER that the Plans show all previous or current sewers, waterlines, electric lines, gas lines, telephone lines and other underground obstacles and utilities. CONTRACTOR shall exercise caution to prevent damage to existing utilities and other obstacles or facilities not meant for demolition or construction modifications during the progress of the

construction Work, taking care to locate same in advance of the actual Work. OWNER or ENGINEER will render reasonable assistance to CONTRACTOR in the matter of determining the location of existing utilities by making available such existing maps, records, and other available existing information as may be accessible to OWNER or ENGINEER, when requested to do so, but the accuracy of such information will not be guaranteed by OWNER or ENGINEER. CONTRACTOR shall make repairs and/or replacements to all damage to existing utilities resulting from his operations. Where a pipe, duct or other structure of a utility is exposed, which, in the opinion of ENGINEER requires strengthening, altering, shielding or moving, if that utility owner does not cure the situation itself, CONTRACTOR shall perform such Work on same as ENGINEER may order in writing after consultation by ENGINEER with the affected utility owner, that Work, if any, may be paid for by OWNER as extra Work. Should CONTRACTOR, in the layout of his Work, encounter any pipe, underground utility or structure, the location of which has not been furnished to him by ENGINEER, he shall bring such conditions to the attention of ENGINEER for ENGINEER, OWNER and CONTRACTOR discussion to determine the CONTRACTOR'S method to be used to pin in place, remove or bypass such obstructions.

6.22.6 It is essential that in the event of any CONTRACTOR damage being caused to existing utilities, that immediate attention be given to their repair. Any repair work carried out shall be at the non-reimbursable cost of CONTRACTOR and shall be performed to the complete satisfaction of ENGINEER and OWNER, who will acknowledge same in writing. It is therefore, the duty of CONTRACTOR, prior to Bid submittal if possible, and no later than the commencement of construction, to inspect and accurately record in writing to OWNER and ENGINEER, the pre-existing condition of any utility which he reasonably suspects or knows to be damaged, faulty, or defective. In addition, any such utilities so recorded, which in the opinion of CONTRACTOR may deteriorate further as a result of the proposed mode of construction operations should be protected. CONTRACTOR shall discuss with OWNER and ENGINEER what appropriate remedial measures should be employed by CONTRACTOR or utility owner to reach a resolution.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property, or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners, the scheduling and location(s), that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, restoration and replacement of their property. All damage, injury or loss to any property referred to in paragraphs 6.22.3 and 6.22.4 caused, directly or indirectly, in whole or in part by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work; or anyone for whose acts any of them may be liable; shall be remedied by CONTRACTOR. CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable to ENGINEER (except as otherwise expressly provided in connection with Substantial Completion).

6.23 CONTRACTOR shall designate in writing to OWNER a responsible representative

at the Project site whose duty shall be the management of risk and safety, and that person shall make a concerted effort to assist workers and visitors at the Project site to prevent accidents. This person shall be CONTRACTOR's superintendent, unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies:

6.24 In emergencies affecting the safety or protection of persons, or the Work, or property at the Project site or adjacent thereto, CONTRACTOR, without special written or oral instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Work or Contract Documents is recommended because of the CONTRACTOR's prompt action taken in response to an emergency, a Work Directive Change or Change Order may be issued by OWNER to document the consequences of any changes or variations.

Shop Drawings and Samples:

6.25 After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review and approval, in accordance with the accepted Schedule of Shop Drawing submissions (see process in paragraphs 2.6 and 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, a copy of all Shop Drawings, to ENGINEER, which will bear a stamp or specific written indication by ENGINEER that CONTRACTOR has satisfied CONTRACTOR's submission review responsibilities under the Contract Documents. All submissions will be identified as the ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to efficiently and comprehensively review the CONTRACTOR's information as required.

6.25.1 Before ordering any material or doing any Work, CONTRACTOR will verify all measurements of any existing and new Work and shall be responsible for their correctness. Any differences which may be found shall be submitted to ENGINEER for consideration before proceeding with the Work. No extra compensation will be allowed to CONTRACTOR because of differences between actual dimensions and measurements indicated on the Drawings.

6.26 CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has internally satisfied CONTRACTOR's submission review responsibilities under the Contract Documents and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which the material is intended.

6.27

6.27.1 Before submission of each Shop Drawing or sample, CONTRACTOR shall have internally determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples, and with the requirements of the Work and the Contract Documents.

6.27.2 At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review and approval, of each such CONTRACTOR variation.

6.28 ENGINEER will review and approve with reasonable promptness, Shop Drawings and samples, but ENGINEER's review and approval will be only for general conformance with the design concept of the Project and for compliance with the information given in the Contract Documents, and shall not extend to CONTRACTOR's means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents), or to CONTRACTOR's safety precautions or programs incident thereto. The review and approval of a separate or component item will not indicate approval of the assembly into which the item integrally functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required, new samples for review and approval. CONTRACTOR shall direct ENGINEER's specific attention in writing to the most current revisions, other than the corrections called for by ENGINEER on previous CONTRACTOR submittals.

6.29 ENGINEER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents, unless CONTRACTOR has in writing called ENGINEER's specific attention to each such variation at the time of submission as required by paragraph 6.27.2, and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for CONTRACTOR's errors or omissions in the Shop Drawings, or from responsibility for having complied with the provisions of paragraph 6.27.1.

6.30 Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to ENGINEER'S review and approval of the pertinent submission will be at the sole risk, and non-reimbursable expense and responsibility of CONTRACTOR.

Continuing the Work:

6.31 CONTRACTOR shall carry on the Work and adhere to the Progress Schedule during any and all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as OWNER may otherwise agree to in writing.

INDEMNIFICATION:

6.32 CONTRACTOR AGREES TO AND SHALL INDEMNIFY AND HOLD HARMLESS THE CITY OF BROWNSVILLE AND THE BROWNSVILLE PUBLIC UTILITIES BOARD, INCLUDING THEIR RESPECTIVE COMMISSIONERS, BOARD MEMBERS, OFFICERS, AND EMPLOYEES (INDEMNITEES) FROM AND AGAINST ANY AND ALL CLAIMS, LOSSES, 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 OR IN CONNECTION WITH THE NEGLIGENT PERFORMANCE OF THE WORK, PROVIDED THAT SUCH CLAIM, DAMAGE, LOSS, LIABILITY OR EXPENSE: (A) IS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE OR DEATH OR TO INJURY OR DESTRUCTION OF TANGIBLE PROPERTY, INCLUDING THE LOSS OF USE RESULTING THEREFROM; AND (B) IS CAUSED IN WHOLE OR IN PART BY ANY CONDITION OF THE WORK OR MATERIALS, OR BY ANY NEGLIGENT ACT OR OMISSION OF CONTRACTOR, ANY SUBTIER SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY CONTRACTOR OR ANY SUBCONTRACTOR OR ANYONE FOR WHOSE ACTS CONTRACTOR OR ANY SUBCONTRACTOR MAY BE LIABLE UNDER THIS CONTRACT.

SUCH INDEMNITY SHALL APPLY WHERE THE CLAIMS, LOSSES, DAMAGES, CAUSES OF ACTION, SUITS, OR LIABILITY ARISE IN PART FROM THE CONCURRENT NEGLIGENCE OF INDEMNITEES.

IT IS THE EXPRESSED INTENTION OF THE PARTIES HERETO, BOTH CONTRACTOR AND INDEMNITEES THAT THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH IS INDEMNITY BY THE CONTRACTOR, TO INDEMNIFY AND PROTECT INDEMNITEES FROM THE CONSEQUENCES OF INDEMNITEE'S OWN NEGLIGENCE, WHERE THAT NEGLIGENCE IS A CONCURRING CAUSE OF THE INJURY, DEATH OR DAMAGE. FURTHERMORE, HOWEVER, THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH SHALL HAVE NO APPLICATION TO ANY CLAIM, LOSS, DAMAGE, CAUSE OF ACTION, SUIT, AND LIABILITY WHERE THE INJURY OR DEATH OR DAMAGE RESULTS FROM THE SOLE NEGLIGENCE OF THE INDEMNITEES, INDEPENDENT OF THE FAULT OF ANY OTHER PERSON OR ENTITY.

6.33 IN ANY AND ALL CLAIMS AGAINST INDEMNITEES OR ANY OF THEIR CONSULTANTS, AGENTS OR EMPLOYEES BY ANY EMPLOYEE OF CONTRACTOR, ANY SUBCONTRACTOR, ANY PERSON OR ORGANIZATION DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM TO PERFORM OR FURNISH ANY OF THE WORK, OR ANYONE FOR WHOSE ACTS ANY OF THEM MAY BE LIABLE, THE INDEMNIFICATION OBLIGATION UNDER PARAGRAPH 6.32 SHALL NOT BE LIMITED IN ANY WAY BY ANY LIMITATION ON THE AMOUNT OR TYPE OF DAMAGES, COMPENSATION OR BENEFITS PAYABLE BY

OR FOR CONTRACTOR, OR ANY SUCH SUBCONTRACTOR, OR OTHER PERSON OR ORGANIZATION UNDER WORKERS' OR WORKMEN'S COMPENSATION ACTS, DISABILITY BENEFIT ACTS OR OTHER EMPLOYEE BENEFIT ACTS.

6.34 THE OBLIGATIONS OF CONTRACTOR UNDER PARAGRAPH 6.32 SHALL NOT EXTEND TO ANY LIABILITY OF ENGINEER ARISING OUT OF THE PREPARATION OR APPROVAL OF PROJECT MAPS, DRAWINGS, DESIGNS, PLANS, SPECIFICATIONS, OPINIONS, CALCULATIONS, REPORTS, AND SURVEYS.,

6.35 CONTRACTOR shall perform all phases of Work, other than general clean-up, through the duration of the Contract, as defined in these General and any Supplementary Conditions. If CONTRACTOR desires to perform Work, other than general clean-up, during weekends or holidays, prior proper arrangements must be made in writing with OWNER, or any other regulatory agency regarding such Work.

6.35.1 General. This Contract shall be based upon payment by CONTRACTOR and his Subcontractors of wage rates not less than the General Prevailing Wage Rate of per diem wages for work of a similar character in Cameron County, Texas, for each type of laborer, workman or mechanic needed to implement the Contract at the Project Site, and not less than the general prevailing rate of per diem wages for legal holiday and overtime Work. The Schedule of General Prevailing Wage Rates specifically adopted by the OWNER for this Project, and other important Wage and Labor Standard Provisions are included in these Contract Documents in the Supplementary Conditions. Pursuant to local OWNER labor policy, no Project worker shall be paid less than \$8.00 per hour, regardless of the adopted wage listings in the attached U. S. Department of Labor General Wage Decision for Cameron County, Texas.

CONTRACTOR shall at minimum comply with all requirements of the prevailing wage law of the State of Texas, Texas Revised Civil Statutes, Texas Government Code (TGC) Section 2259.001 et seq., including the latest amendments thereto, and those special local wage provisions adopted by OWNER. When in conflict, the more stringent requirements apply to CONTRACTOR.

6.35.2 Records. CONTRACTOR and each Subcontractor shall keep an accurate record showing the names and occupations of all classifications of laborers, workmen, and mechanics employed, together with the actual wages paid to each worker. At all reasonable working hours, such CONTRACTOR records shall be open to inspection by the representatives of the OWNER. With each monthly application for payment, CONTRACTOR shall provide to ENGINEER a certified copy of such payroll records as necessary to substantiate compliance with this provision during the period of time for which the application for payment pertains. OWNER shall take cognizance of any and all employee complaints regarding any violations of the requirements of TGC Section 2259.001 et seq.

6.35.3 Penalty. In case CONTRACTOR and any Subcontractor fail to comply with the prevailing wage law, by statutory authority, CONTRACTOR shall forfeit to the OWNER \$60.00 per calendar day, or portion thereof, for each laborer, workman, or mechanic who is paid

less than the specified local rate for any Work done under the Contract.

6.35.4 Hours of Labor. CONTRACTOR shall comply with all requirements of the hours of work on public works in accordance with the laws of the State of Texas, Texas Revised Civil Statutes, Articles 5165.1 to 5165.3, including the latest amendments thereto.

No CONTRACTOR or Subcontractor contracting for any part of the Contract Work which may require or involve the employment of laborers, workmen or mechanics at the Project Site, shall require or permit any laborer, workman or mechanic in any work week in which he is employed on such Work, to work in excess of forty (40) hours in such work week, unless such laborer, workman or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay, for all hours in excess of forty (40) hours in such work week.

6.35.5 Equal Employment Opportunities. The CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, religion, gender, sexual preference, national origin, age, physically challenged condition, or a political belief or affiliation, and will comply with all State and federal statutes applicable to CONTRACTOR which relate to employment discrimination.

6.35.6 Veterans Preference. Pursuant to Texas Revised Civil Statutes, Article 4413(31), including the latest amendments thereto, CONTRACTOR shall give preference in employment to honorably discharged veterans who were engaged in the military services of the United States in time of war or conflict and who are, and have been, citizens of Texas for not less than five (5) years.

ARTICLE 7. OTHER WORK

Related Work at Site:

7.1 OWNER may perform other separate work related to the Project at the site by OWNER's own forces, have other work performed by utility owners, or award other direct construction contracts therefor, which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not originally noted in these Contract Documents, advance written notice thereof will be given to CONTRACTOR prior to OWNER authorizing any such other work; and, if CONTRACTOR believes that such other work performance will involve additional expense to CONTRACTOR, or requires additional time, and the Parties hereto are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefore as provided in Articles 11 and 12. All increases or decreases in the Contract Price shall be governed by all State and local laws, statutes, codes, ordinances, rules and regulations governing public competitive bidding and Change Orders.

7.2 CONTRACTOR shall afford each utility owner and other contractor who is a party to a separate direct contract with OWNER (or OWNER, if OWNER itself is performing the additional work with OWNER's employees) proper and safe access to the Project site and a reasonable opportunity for the introduction and storage of materials and equipment, and the execution of such separate work, and shall properly connect and coordinate the Work with their

separate work. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any separate work of others by cutting, excavating or otherwise altering their work, and will only cut or alter their work with the written consent of ENGINEER and the consent of other contractor(s), persons whose separate work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors, to the extent that there are comparable provisions for the benefit of CONTRACTOR in said separate direct contracts between OWNER and such other utility owners and other contractors.

7.3 If any part of CONTRACTOR's Work depends upon the separate work of any such other contractor or utility owner (or OWNER) for proper execution or results, CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such other work that renders it unavailable or unsuitable for such integration, proper execution and results of CONTRACTOR'S Work. CONTRACTOR's failure to so report will constitute an acceptance of the other separate work as fit and proper for integration with CONTRACTOR's Work, except for latent or non-apparent defects and deficiencies in the other work.

Coordination:

7.4 If OWNER contracts with others for the performance of other separate work on the Project at the Project site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified by OWNER in the Supplementary Conditions, or OWNER'S WORK DIRECTIVE CHANGE, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions or OWNER'S WORK DIRECTIVE CHANGE.

ARTICLE 8. OWNER'S RESPONSIBILITIES

8.1 OWNER shall issue all written and oral communications to CONTRACTOR through OWNER's Field Representative and/or ENGINEER.

8.2 In case of termination of the employment of ENGINEER, OWNER shall appoint a replacement Engineer whose status under the Contract Documents shall be that of the former ENGINEER.

8.3 OWNER shall furnish the data required of OWNER under the Contract Documents promptly, and shall make eligible payments to CONTRACTOR within the time periods allowed by the Contract Documents and State prompt pay statutes, after payments are due as provided in Article 14.

8.4 OWNER's duties in respect to providing lands and easements and providing any recent existing available engineering surveys to establish CONTRACTOR construction reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of any existing and available reports of explorations

and tests of subsurface pre-existing conditions at the Project site which are not part of the Contract Documents, but which have been utilized by ENGINEER in generally preparing the Drawings and Specifications.

8.5 OWNER is obligated to consider and may execute Change Orders as indicated in paragraph 10.4.

8.6 OWNER's responsibility in respect to certain inspections, tests and approvals is set forth in paragraphs 13.3 through 13.5.

8.7 In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 outlines OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9. ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

9.1 OWNER's private consulting ENGINEER (generally through its Resident Project Representative) will be OWNER's primary representative during the construction period. OWNER's Field Representative will be the secondary representative during the construction period.

Visits to Site:

9.2 ENGINEER, routinely through the Resident Project Representative will make periodic visits to the site at intervals appropriate to the various stages of construction to observe the progress and general quality of the executed Work and to determine, in general, for the benefit of OWNER only, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site observations to check the quality or quantity of the Work, because CONTRACTOR is solely responsible for same. ENGINEER's efforts will be directed toward providing for OWNER only, a greater degree of confidence that the CONTRACTOR's completed Work will conform to the Contract Documents. On the basis of such limited visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to advise OWNER of any obvious defects and deficiencies in the Work.

On-Site Project Representation:

9.3 OWNER will generally furnish a Project Field Representative to assist ENGINEER in observing the daily performance of the Work for the sole benefit of the OWNER. This is an option available to OWNER that need not be exercised, nor may it be relied upon by the CONTRACTOR in any way to satisfy CONTRACTOR's quality control responsibility. The secondary duties, responsibilities and limitations of authority of any such OWNER Field Representative and any assistants will be determined by the OWNER.

Clarifications and Interpretations:

9.4 ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation by ENGINEER justifies an increase in the Contract Price or an extension of the Contract Time, and the OWNER and CONTRACTOR are unable to agree to the basis, amount or extent thereof, CONTRACTOR may make a claim therefore as provided in Article 11 or Article 12. Any increases or decreases in the Contract Price shall be governed by all State and local laws, statutes, codes, ordinances, rules and regulations governing public competitive bidding and Change Orders.

Authorized Variations in Work:

9.5 ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time, and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall promptly perform the Work involved. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time, CONTRACTOR may make a claim therefore as provided in Article 11 or 12. Any increases or decreases in the Contract Price shall be governed by all State and local laws, statutes, codes, ordinances, rules and regulations governing public competitive bidding and Change Orders.

Rejecting Defective Work:

9.6 ENGINEER will have the authority to disapprove or reject Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7 In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.25 through 6.30 inclusive.

9.8 In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9 In connection with ENGINEER's responsibilities in respect to Applications for Payment, etc., see Article 14.

Determinations for Unit Prices:

9.10 ENGINEER will determine the final actual quantities and classifications of any Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR, ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decisions thereon will be final and binding upon OWNER and CONTRACTOR.

Decisions on Disputes:

9.11 ENGINEER will be the interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work, and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time, will be referred initially to ENGINEER in writing, with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant (OWNER or CONTRACTOR) to ENGINEER and opposing Party no later than thirty (30) calendar days after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other Party within sixty (60) calendar days after such occurrence, unless ENGINEER allows claimant an additional period of time in writing to ascertain more accurate data in support of the claim.

9.12 When functioning as interpreter and judge under paragraphs 9.10 and 9.11, it is hereby mutually agreed between OWNER and CONTRACTOR that ENGINEER will not be personally liable in connection with any non-negligent interpretation or decision rendered in good faith in such official and professional engineering capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.13) will be a condition precedent to any exercise by CONTRACTOR and/or OWNER of such rights or remedies they may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities:

9.13 Neither ENGINEER's authority to act under this Article 9, or elsewhere in the Contract Documents, nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority, shall give rise to any personal or corporate duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14 Whenever in the Contract Documents the terms: "as ordered"; "as directed"; "as required"; "as allowed"; "as approved"; or terms of like effect or import are used, or the adjectives: "reasonable"; "suitable"; "acceptable"; "proper"; or "satisfactory"; or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for general compliance with the Contract Documents (unless there is a specific statement

indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty to supervise or direct the furnishing, performance, or quality control of the CONTRACTOR's Work or any duty or authority to undertake responsibility of the CONTRACTOR contrary to the provisions of paragraph 9.15 or 9.16.

9.15 ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, quality control, sequences or procedures of construction, or the safety precautions and programs incident thereto, for which CONTRACTOR shall be solely responsible. ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16 ENGINEER will not be responsible for the acts and/or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10. CHANGES IN THE WORK

10.1 Without invalidating the Agreement and without notice to any surety, OWNER may, at any time, or from time to time, order additions, deletions or revisions in the Work that are in compliance with State public competitive bidding statutes and laws governing Change Orders; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved, which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2 If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price, or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefore as provided in Article 11 or Article 12. All increases or decreases in the Contract Price shall be governed by all State and local laws, statutes, codes, ordinances, rules and regulations governing public competitive bidding and Change Orders.

10.3 CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.24, and except in the case of uncovering Work as provided in paragraph 13.9.

10.4 OWNER and CONTRACTOR may execute appropriate Change Orders (or Written Amendments) covering:

10.4.1 changes in the Work which are ordered by OWNER pursuant to paragraph 10.1; are required because of willing and informed acceptance of defective Work by OWNER under paragraph 13.13; or OWNER correcting defective Work under paragraph 13.14; or are otherwise agreed to by the Parties;

10.4.2 changes in the Contract Price or Contract Time which are agreed to by the Parties; and

10.4.3 changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the Progress Schedule as provided in paragraph 6.31.

10.5 If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety by CONTRACTOR, the giving of any such notice will be CONTRACTOR'S sole responsibility, and the amount of each applicable Bond may be adjusted accordingly.

ARTICLE 11. CHANGE OF CONTRACT PRICE

11.1 The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for properly performing the Work. All original duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the original Contract Price.

11.2 The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on initial written notice delivered promptly by the CONTRACTOR or OWNER to the other Party, and to ENGINEER promptly (but in no event later than thirty (30) calendar days after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall follow and be delivered within sixty (60) calendar days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim)), and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant believes he is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11, if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid, and will be deemed legally waived under this Contract, if not submitted in accordance with this paragraph 11.2.

11.3 The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the actual quantities of the Work items involved (subject to the provisions of paragraphs 11.9.1. through 11.9.3. inclusive).

11.3.2 By mutual acceptance of a lump sum (which may include an allowance for

overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3 On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5), plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

Cost of the Work:

11.4 The term “Cost of the Work” means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the Cameron County, Texas area and shall include only the following items, and shall not include any of the costs itemized in paragraph 11.5:

11.4.1 Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under Schedules of Job Classifications as set forth by OWNER in the Supplementary Conditions of the Contract Documents. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of any fringe benefits, if any, which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday, as may be applicable thereto. Such employees shall include superintendents and foremen at the Project site. The expenses of performing Work after regular daily working hours on Saturday, Sunday or on legal holidays shall be included in the above, to the extent authorized in an advanced written approval notice by OWNER.

11.4.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR, unless OWNER deposits funds with CONTRACTOR with which to make advanced payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment, shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3 Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR, and shall deliver such bids to OWNER who will then determine which bid will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable. CONTRACTOR shall accomplish the applicability of the Contract Documents to Subcontractor agreements by using either “flow down” provisions or appropriate recitations in the subcontract agreements of parts of these Contract Documents.

11.4.4 Costs of special consultants (including but not limited to engineers,

architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5 Supplemental costs actually incurred including the following:

11.4.5.1 The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the Project site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used, but not consumed, which remain the property of CONTRACTOR.

11.4.5.3 Rentals of all construction equipment and machinery and the parts thereof, whether rented from CONTRACTOR or others, in accordance with written rental agreements produced to OWNER as requested, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof (all in accordance with terms of said rental agreements). The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4 Any sales, consumer, use or similar taxes actually paid as related to the Work that OWNER is not exempt from paying, and for which CONTRACTOR is liable, as imposed by Laws and Regulations.

11.4.5.5 Deposits forfeited for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them, or for whose acts any of them may be liable, and any royalty payments and fees for permits and licenses.

11.4.5.6 Losses and damages (and related expenses), not compensated to CONTRACTOR by insurance or otherwise, to the Work, or otherwise sustained by CONTRACTOR in connection with the proper performance and furnishing of the Work, provided they have resulted from causes other than the intentional and/or negligent acts and/or omissions of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them, or for whose acts and/or omissions any of them may be liable. Such losses shall include settlements made with the advanced written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for reconstruction services, only at a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7 The cost of utilities, fuel and sanitary facilities at the Project site.

11.4.5.8 Minor expenses such as telefaxes, long distance telephone calls, telephone service at the Project site, express mailings and similar petty cash items in connection with the Work.

11.4.5.9 Cost of premiums for any additional Bond and insurance coverages required because of any additive Change Orders to the Work.

11.5 The term “Cost of the Work” shall not include any of the following:

11.5.1 Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the Project site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon Schedule of Job Classifications referred to in paragraph 11.4.1, or specifically covered by paragraph 11.4.4, all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2 Expenses of CONTRACTOR's principal and branch offices, other than any CONTRACTOR's office at the Project site.

11.5.3 Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent CONTRACTOR payments.

11.5.4 Cost of premiums for all Bonds and for all insurance, whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the types of coverage and amounts thereof (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5 Costs resulting from the intentional and/or negligent acts and/or omissions of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them, or for whose acts and/or omissions any of them may be liable, including but not limited to, the correction of defective Work, salvaging or disposal of materials or equipment wrongly supplied, and repairing any damage to real or personal property.

11.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

CONTRACTOR's Fee:

11.6 The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1 a mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2 a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1 for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's Fee shall be fifteen (15%) percent;

11.6.2.2 for costs incurred under paragraph 11.4.3, the CONTRACTOR's Fee shall be five (5%) percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen (15%) percent;

11.6.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.4 the amount of credit to be allowed by CONTRACTOR to OWNER for any such Contract change which results in a net decrease in cost will be the amount of the actual net decrease, plus a deduction in CONTRACTOR's Fee by an amount equal to ten (10%) percent of the net decrease; and

11.6.2.5 when both additions and credits are involved in any one Contract change, the adjustment in CONTRACTOR'S Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

11.7 Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5, CONTRACTOR will timely submit in a written form acceptable to ENGINEER, an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8 It is understood that CONTRACTOR has included in the Contract Price any and all allowances so named in the Contract Documents and shall cause the Work so covered thereby to be done by such Subcontractors or Suppliers, and for such sums within the limit of the allowances as may be acceptable to ENGINEER. CONTRACTOR agrees that:

11.8.1 Any allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Project site, and all applicable non-exempt taxes; and

11.8.2 CONTRACTOR's costs for managing on the Project site, labor, materials and equipment installation costs, overhead, profit and other expenses already contemplated for determining the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any of such costs will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

Unit Price Work:

11.9

11.9.1 Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work, multiplied by the estimated quantity of each item as indicated in the Agreement. The ENGINEER'S estimated quantities of items of Unit Price Work are not guaranteed by the OWNER to be actually performed and are solely for the purpose of comparison of bids and determining an initial Contract Price. Determinations of the actual final quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 9.10.

11.9.2 Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3 Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the ENGINEER's estimated quantity of such item indicated in the Contract Documents (generally plus or minus fifteen percent (15%), and there is no corresponding and offsetting adjustment(s) with respect to any other Unit Price item(s) of Work, and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a timely claim for an increase in the Contract Price in accordance with Article 11 and any applicable State law, if the Parties are unable to otherwise agree as to the amount of any such increase. OWNER is also able to file a similar timely claim with ENGINEER if OWNER believes that the quantity of Unit Price Work items has significantly increased to the point that OWNER believes it is owed a credit from CONTRACTOR for any volume discount pricing that CONTRACTOR should have received by purchasing such additional quantities.

ARTICLE 12 -- CHANGE OF CONTRACT TIME

12.1 The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on initial written notice delivered by the CONTRACTOR or OWNER to the ENGINEER and to the other Party (but in no event later than thirty (30) calendar days) after the occurrence of the event giving rise to the claim, and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall follow and be delivered within sixty (60) calendar days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the time adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 9.11, if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid and will be

deemed legally waived under this Contract, if not submitted in accordance with the requirements of this paragraph 12.1.

12.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the reasonable control of CONTRACTOR, so long as CONTRACTOR has made good faith efforts to mitigate delaying impacts and if a claim is made therefore as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts, omissions, or neglect by OWNER or others performing additional separate work as contemplated by Article 7, or to fires, floods exceeding the 100 year frequency in Cameron County, labor disputes, epidemics, extremely abnormal weather for Cameron County, Texas, as may be described further in these Contract Documents, or Acts of God.

12.3 **ALL TIME LIMITS STATED IN THE CONTRACT DOCUMENTS ARE MUTUALLY AGREED TO BE OF THE ESSENCE OF THE AGREEMENT.** The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either Party.

ARTICLE 13 -- WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

13.1 CONTRACTOR warrants and guarantees to OWNER that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of any obvious patent Work defects discovered by OWNER or ENGINEER shall be promptly given to CONTRACTOR in writing. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13. In case of dispute as to the cause of improper functioning of all or any part of the Work, the burden of proof that CONTRACTOR has complied with the Contract Documents rests with CONTRACTOR for this Work. He shall submit in writing to ENGINEER his opinion and basis of proof for the adequacy of his Work. OWNER may have those tests made, which OWNER deems advisable, by an independent testing laboratory of OWNER's choice. If any test so made indicates a defect in material or workmanship, or that one or more manufactured components of the Work are performing below the standard set by the manufacturer's public data and specifications, or the Specifications of these Contract Documents, the entire cost of all such tests shall be paid for by CONTRACTOR, and he shall also pay for retesting of the corrected Work, until in the ENGINEER's opinion, it functions satisfactorily. The Work shall be guaranteed to be free from defects due to faulty workmanship or material for a period of one (1) year from the date of OWNER issue of the Certificate of Acceptance. Work found to be improper or imperfect shall be replaced or redone without cost to OWNER within the one year guarantee period. Neither the Certificate of Acceptance, final payment, or any other provision of the Contract Documents shall relieve CONTRACTOR from his workmanship guarantee. Failure of CONTRACTOR to repair or replace faulty Work entitles OWNER to repair or replace the same and recover the costs from CONTRACTOR and/or his Surety. CONTRACTOR shall be the sole guarantor of the Work installed under this Contract and no third party guarantees/warranties by Subcontractors or suppliers of various components or materials will

be acceptable; nor shall agreements with Subcontractors or material or component suppliers by CONTRACTOR reduce CONTRACTOR's sole responsibility to OWNER under this Agreement. All equipment shall be warrantied and/or guaranteed by either CONTRACTOR or its supplier/manufacturer by assignment to OWNER, for at least one (1) year from the date of OWNER acceptance of the entire Project. It is anticipated by OWNER and acknowledged by CONTRACTOR that many equipment and material warranties from suppliers/manufacturers shall extend well beyond the initial one (1) year post acceptance period. The CONTRACTOR shall transfer by assignment to the OWNER any and all third party supplier and manufacturer warranties and/or guaranties that remain in effect beyond the one (1) year workmanship guarantee/warranty period. At the option of the OWNER, all materials/equipment are also warrantied or guaranteed to OWNER for one (1) year from the date of any early partial acceptance of Work, and beneficial use of a completed system component of Work prior to full integration with the entire completed Project.

Access to Work:

13.2. ENGINEER AND ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests, will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall promptly provide proper and safe conditions for such authorized and identified reasonable access in accordance with any Occupational Safety and Health Administration (OSHA) and CONTRACTOR's safety program and insurance requirements.

It is agreed by CONTRACTOR that OWNER shall be and is hereby authorized to appoint from time to time, OWNER's subordinate supervisors, observers, and/or inspectors, as the OWNER may deem proper to inspect the material furnished and observe the Work performed under this Agreement, and to see that the material is furnished and Work is generally performed in accordance with the Specifications. This OWNER function, for OWNER's sole benefit, does not excuse the CONTRACTOR from his own quality control assurance, which is solely his responsibility. CONTRACTOR shall furnish all reasonable aid and assistance required by the ENGINEER, and OWNER's subordinate supervisors, observers and/or inspectors to perform observation, inspection and examination of the Work and all parts of the Work. CONTRACTOR shall regard and obey the directions and instructions of the ENGINEER and any OWNER subordinate supervisors, observers and/or inspector so appointed, when such directions are consistent with the obligations of the Contact Documents and included Specifications, provided, however, that should CONTRACTOR object to any order by any OWNER subordinate supervisor or inspector, CONTRACTOR may within ten (10) calendar days submit written notice to ENGINEER for his decision. Except as herein before provided, the authority of OWNER's subordinate supervisors or inspectors shall be limited to the rejection of unsatisfactory Work and materials and to the potential short-term suspension of the Work, until the questions of Work acceptability can be referred to ENGINEER.

13.2.1. CONTRACTOR shall cooperate with any OWNER-provided testing laboratory for the purpose of allowing services of the laboratory to be timely and properly performed. CONTRACTOR shall provide OWNER's representative and testing laboratory a minimum of twenty-four (24) hours notice of readiness for all testing as required by the

Specifications or customary construction industry standards. OWNER shall bear the cost of density and concrete testing, for the first test only. Testing of equipment, lines and valves shall be the responsibility of CONTRACTOR and he shall notify ENGINEER and OWNER'S Field Representative of his scheduled time for such tests, so that the test can be witnessed by ENGINEER and OWNER'S Field Representative. If initial tests show failure, the CONTRACTOR shall incur the non-reimbursable costs of retesting the areas that failed after CONTRACTOR'S corrective action has been taken, including the per diem personnel and equipment costs incurred by OWNER in said retesting. The per diem costs shall be determined based on the hourly wage plus reasonable overhead of ENGINEER's and OWNER'S personnel needed to be present at the Project site during retesting, and by the locally prevailing rental rate for the vehicles and equipment utilized in retesting. These retesting costs shall be paid by CONTRACTOR prior to OWNER's interim conditional acceptance of the Work improvements.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER and /or OWNER's Field Representative timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefore, pay all costs as included in the Contract Price in connection therewith, and furnish ENGINEER the required final certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all non-reimbursable costs in connection with any special inspection or testing required in connection with OWNER'S or ENGINEER'S approval and acceptance of an alternative Supplier of "or equal" proposed substitutions of materials or equipment proposed by CONTRACTOR to be incorporated in the Work, or of alternative materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof, for incorporation in the Work. The cost of all routine inspections, tests and approvals, other than any of those special inspections which may be required by the Contract Documents to be paid by CONTRACTOR, shall be paid by OWNER (unless otherwise specified).

13.5 All inspections, tests or approvals, other than those required by Laws or Regulations of any public body having jurisdiction, shall be performed by organizations acceptable to OWNER (or by ENGINEER, if so specified).

13.6 If any Work (including the work of others) that is to be inspected, tested or approved is backfilled or otherwise built-in or concealed by CONTRACTOR without written concurrence of ENGINEER, it must, if requested in writing by ENGINEER, be uncovered and revealed for ENGINEER'S Resident Project Representative and OWNER Field Representative observation. Such uncovering shall be at CONTRACTOR's non-reimbursable expense, unless CONTRACTOR has given ENGINEER timely written notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness (not to exceed three (3) days) in written response to such CONTRACTOR notice.

13.7 Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR's sole obligations to perform the Work and

constantly employ quality control in accordance with the Contract Documents.

Uncovering Work:

13.8 If any Work is backfilled contrary to the advanced written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's non-reimbursable expense.

13.9 If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's written request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question shall be uncovered by CONTRACTOR by furnishing all necessary labor, material and equipment to uncover same. If it is found that such Work is defective, CONTRACTOR shall bear all direct, indirect and consequential non-reimbursable costs of such uncovering, exposure, observation, inspection and testing, and of the satisfactory repair, replacement and reconstruction, (including but not limited to fees and charges of ENGINEER, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price for that portion of these costs that CONTRACTOR does not otherwise reimburse to OWNER; and if the Parties are unable to agree as to the amount thereof, OWNER may make a claim therefore as provided in Article 11. If, however, such Work is not found to be defective, CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, repair, replacement and reconstruction; and, if the Parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefore as provided in Articles 11 and 12. All increases or decreases in the Contract Price shall be governed by all State and local laws, statutes, codes, ordinances, rules and regulations governing public competitive bidding and Change Orders.

Owner May Stop the Work:

13.10 If the Work is defective in the opinion of the ENGINEER and OWNER, or CONTRACTOR fails to supply sufficient skilled workers, Subcontractors, or suitable materials or equipment, or otherwise fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may issue a written order for CONTRACTOR to stop the Work, or any portion thereof, until the cause for such stop Work order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, or any other entity.

Correction or Removal of Defective Work:

13.11 If required by ENGINEER, CONTRACTOR shall promptly, as directed in writing, either correct all defective Work, whether or not fabricated, installed or completed, if the Work has been rejected by ENGINEER, and remove it from the Project site and replace it with non-defective Work. CONTRACTOR shall bear all direct, indirect and consequential non-reimbursable costs of such correction or removal (including but not limited to fees and charges of ENGINEER, architects, attorneys and other professionals) made necessary thereby.

One Year Workmanship Correction Period:

13.12 If within one (1) year after the date of OWNER issuance of the Certificate of Acceptance, or such longer period of time as may be prescribed by Laws or Regulations, or by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the Project site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such OWNER instructions, or in an emergency where CONTRACTOR delay would cause serious risk of loss or damage to OWNER's facilities, OWNER may have the defective Work corrected, or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of ENGINEER, architects, attorneys and other professionals) will be charged to and paid by CONTRACTOR. In special circumstances, where a particular item of equipment is placed in continuous service by OWNER before acceptance of all the Work, the minimum one (1) year workmanship guarantee and/or equipment warranty correction periods for that item may start to run from an earlier date, if so provided in the Specifications or by Written Contract Amendment.

Acceptance of Defective Work:

13.13 If instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final Project payment), prefers to accept it "as is," OWNER may do so in writing. CONTRACTOR shall bear all reasonable direct, indirect and consequential non-reimbursable costs attributable to OWNER's evaluation of, and determination to accept such defective Work (such OWNER costs to be approved by ENGINEER as to reasonableness and may include but not be limited to fees and charges of ENGINEER and any OWNER's, architects, attorneys and other professionals). If any such OWNER acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions to the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the Parties are unable to agree as to the amount thereof, OWNER or CONTRACTOR may make a written claim therefore as provided in Article 11. If the acceptance occurs after such final Project payment, an appropriate amount as determined by OWNER will be charged to and paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14 If CONTRACTOR fails within seven (7) calendar days after written notice by ENGINEER to proceed to correct, and to actually correct defective Work; or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11; or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents; or if CONTRACTOR fails to comply with any other provision of the Contract Documents; OWNER may, after the pre-requisite seven (7) calendar days written notice to CONTRACTOR, correct and remedy any such CONTRACTOR deficiency. In exercising the rights and remedies under this

paragraph, OWNER shall proceed with reasonable expediency. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Work and Project site; take possession of all or part of the Work; and temporarily suspend CONTRACTOR's Work related thereto; take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Project site; and incorporate in the Work all Project materials, and CONTRACTOR shall allow OWNER and ENGINEER, representatives and employees such access to the Project site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR, in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the Parties are unable to agree as to the amount thereof, OWNER or CONTRACTOR may make a claim therefore as provided in Article 11. Such direct, indirect and consequential OWNER costs will include, but not be limited to: fees and charges of ENGINEER; OWNER's architects; attorneys; and other professionals; all court costs; and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.4.

ARTICLE 14 -- PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1 The Schedule of Values established as provided in paragraph 2.9 will serve as the basis for monthly progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units actually completed, multiplied by the per unit price. CONTRACTOR, ENGINEER and OWNER shall also mutually address in the Schedule of Values any periodic CONTRACTOR reimbursements or direct OWNER payments to third-party vendors producing any specially fabricated goods and equipment with longer lead times prior to delivery to the Project site.

Application for Progress Payment:

14.2 At least twenty (20) calendar days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review, an Application for Payment accurately completed and signed by CONTRACTOR, covering the Work completed as of the date of the Application, and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work, but delivered and suitably stored at the Site, or at another bonded and insured secure location off the nearby Project site as agreed to in an advanced writing signed by CONTRACTOR and OWNER, the Application for Payment shall also be accompanied by a bill of sale, invoice, affidavit of bill(s) paid, or other documentation warranting that OWNER has actually received the title ownership of Project materials and equipment still within the care,

custody and control of CONTRACTOR for Project Work purposes and free and clear of any attempted liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as “Encumbrances”), and evidence that the materials and equipment are covered by appropriate property insurance and other security arrangements to protect OWNER’s legal interest therein, all of which will be satisfactory to OWNER. The amount of OWNER retainage with respect to progress payments, five percent (5%), is stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3 CONTRACTOR warrants and guarantees that title to any Work equipment and materials itemized in any Application for Payment, whether incorporated in the Project, or delivered and stored at or nearby the Project site, will pass to OWNER no later than the time of any progress payment, free and clear of any and all Encumbrances.

Review of Applications for Progress Payment:

14.4 ENGINEER will, within twenty (20) calendar days after receipt of each Application for Payment from CONTRACTOR, either indicate in writing a recommendation for OWNER payment and process the Application, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR will make the necessary corrections and promptly resubmit the Application. Twenty (20) calendar days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the payment amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due, and when due will be promptly paid by OWNER to CONTRACTOR, preferably by electronic transfer.

14.5 ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based upon ENGINEER's limited periodic on-site observations of the Work in progress as an experienced and qualified design professional; and on ENGINEER's review of the Application for Payment and the accompanying data and Schedules; that the Work has progressed to the estimated percentage completion point indicated, that, to the best of ENGINEER's knowledge, information and belief, the status of the Work is in apparent general accordance with the Contract Documents (subject to: a later evaluation of the Work as a functioning whole; prior to or upon Substantial Completion; and subject to the results of any subsequent tests called for in the Contract Documents; and subject to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10; and subject to any other qualifications stated in the ENGINEER’s recommendation to OWNER); and that CONTRACTOR is entitled to payment of the amount recommended. However, by recommending any such payment, ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the CONTRACTOR’s quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents, or that there may not be other matters or issues between the Parties that might entitle CONTRACTOR to be paid additionally by OWNER, or OWNER to withhold payment to CONTRACTOR.

14.6 ENGINEER's recommendation of final Project payment will constitute an additional representation by ENGINEER to OWNER that to the best of ENGINEER's knowledge, the conditions precedent to CONTRACTOR's being entitled to final Project payment, as set forth in paragraph 14.13, have been fulfilled.

14.7 ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's professional opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence, or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion, to protect OWNER from Project loss because:

14.7.1 the Work is defective, or completed Work has been damaged requiring CONTRACTOR correction or replacement.

14.7.2 the Contract Price has been reduced by Written Amendment or Change Order.

14.7.3 OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14, or

14.7.4 because of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may for its own benefit and protection and not for the direct benefit of any third parties, refuse to make CONTRACTOR payment in whole or in part of the amount recommended by ENGINEER, because claims have been made against OWNER on account of CONTRACTOR's improper performance of the Work; or payment bond claims and inquiries have been filed with OWNER or surety by third-parties in connection with the Work and OWNER may wish to consult with CONTRACTOR and/or CONTRACTOR's surety about the status of CONTRACTOR sub-tier payments, or there are other items entitling OWNER to a set-off against the payment amount recommended, but OWNER must give CONTRACTOR written notice stating the reasons for any non-payment to CONTRACTOR.

Substantial Completion:

14.8 When CONTRACTOR considers the entire Work ready for OWNER's intended purpose and use, CONTRACTOR shall notify ENGINEER in writing that the entire Work is Substantially Complete (except for minor items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, ENGINEER and CONTRACTOR shall make a joint inspection of the Work to determine the status of Project completion. If ENGINEER does not consider the Work Substantially Complete, ENGINEER will promptly notify CONTRACTOR in writing giving the reasons therefore. If ENGINEER considers the Work Substantially Complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a

tentative list of pending Work items to be completed or corrected by CONTRACTOR before final payment (“punch-list”). OWNER shall have ten (10) calendar days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not Substantially Complete, ENGINEER will within twenty (20) calendar days after submission of the tentative certificate to OWNER, notify CONTRACTOR in writing, stating the reasons for no accomplishment of Substantial Completion. If, after consideration of OWNER’s written objections regarding non-issuance of a Substantial Completion certificate, ENGINEER considers the Work Substantially Complete, ENGINEER will within said twenty (20) calendar days execute and deliver to OWNER and CONTRACTOR, a definitive certificate of Substantial Completion (with a final punch list of items to be completed or corrected) reflecting such changes from the tentative list as ENGINEER believes justified, after consideration of any objections from OWNER. At the time of delivery of the definitive certificate of Substantial Completion, ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to any Project security, operation, safety, maintenance, HVAC, utilities, insurance, warranties, and guarantees. OWNER and CONTRACTOR shall agree in writing regarding the final division of responsibilities, and so inform ENGINEER.

14.9 OWNER shall have the right to exclude CONTRACTOR from portions of the Project site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to portions of the Work to complete or correct items on the final punch list.

Partial Utilization:

14.10 Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER and CONTRACTOR subsequently agree constitutes a separately functioning and useable part of the Work that can be utilized by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work, subject to the following:

14.10.1 OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for OWNER’s intended use and purpose and Substantially Complete. If CONTRACTOR agrees, CONTRACTOR will certify in writing to OWNER and ENGINEER that said part of the Work is Substantially Complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Additionally, CONTRACTOR at any time may notify OWNER and ENGINEER in writing, that CONTRACTOR considers any such part of the Work ready for OWNER’s intended use and purpose, and substantially complete, and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after such CONTRACTOR request, OWNER, ENGINEER and CONTRACTOR shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER considers that part of the Work to be Substantially Complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to issuance of any certification of Substantial Completion for that part of the Work, and finalizing the division of responsibilities and access thereto.

14.10.2 OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work, although it is not Substantially Complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter, OWNER, ENGINEER and CONTRACTOR shall make an inspection of that part of the Work to determine its status of completion and will prepare a punch-list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER within seven (7) calendar days that such part of the Work is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR, together with a written statement as to the division of responsibilities pending final payment between OWNER and CONTRACTOR, with respect to security, operation, safety, maintenance, HVAC, utilities, insurance, warranties and guarantees for that part of the Work, which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing and so informed ENGINEER). During such OWNER operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on any punch list, and to complete other related Work.

14.10.3 No OWNER use, occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.9 in respect of CONTRACTOR's property insurance notice and endorsement.

Final Inspection:

14.11 Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars (a revised short-list) in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such corrective measures as are necessary to remedy such remaining deficiencies.

A qualified person(s) representing CONTRACTOR shall be present at this final inspection. Prior to this inspection, all Work shall have been completed, tested, adjusted and in final operating condition, if required by the Project Specifications.

Final Application for Payment:

14.12 After CONTRACTOR has completed all such final Work corrections to the satisfaction of ENGINEER and delivered certificates of inspection, marked-up record documents, if any, depicting as-built conditions (as provided in paragraph 6.21) and other important documents--all as required by the Contract Documents; and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for monthly progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to

OWNER) of all third-party claims arising out of, or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish third-party receipts or releases in full; a sworn affidavit of CONTRACTOR that the releases and receipts include prior CONTRACTOR payments for all labor, services, material and equipment for which a timely Payment Bond claim could be filed, and that all payrolls, material and equipment bills, and other CONTRACTOR indebtedness connected with the Work, for which OWNER or OWNER's property might in any way be encumbered, have been paid or otherwise satisfied; and a written consent of the Surety to OWNER's final payment, if any is required by CONTRACTOR's Surety. **IF ANY SUBCONTRACTOR OR SUPPLIER FAILS TO FURNISH CONTRACTOR A RELEASE OR RECEIPT IN FULL, CONTRACTOR MAY FURNISH A SPECIAL INDEMNITY BOND, OR OTHER COLLATERAL SATISFACTORY TO OWNER, TO INDEMNIFY, HOLD HARMLESS, AND FULLY PROTECT OWNER AGAINST ANY POTENTIAL THIRD-PARTY CLAIM.**

Final Payment and Acceptance:

14.13 If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment, and accompanying documentation (all as required by the Contract Documents), ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within twenty (20) calendar days after receipt of the final Application for Payment, indicate in writing, ENGINEER's recommendation to OWNER for payment and process the Application for Payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable, subject to the provisions of paragraph 14.16. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall promptly make the necessary corrections and resubmit the Application. Thirty (30) calendar days after presentation to OWNER of the final Application for Payment and accompanying documentation, in appropriate final form and substance, and with ENGINEER's recommendation and notice of acceptability, the final amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

CONTRACTOR shall submit satisfactory evidence to the OWNER and ENGINEER that all payrolls, and other CONTRACTOR indebtedness connected with the Work have been paid, before a Final Certificate of Acceptance is issued.

14.14 If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the partial payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such Payment. Such partial payment shall be made under the terms and conditions governing final payment, except that it shall not

constitute a final waiver of claims by OWNER.

Contractor's Continuing Obligation:

14.15 CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER; nor the issuance of a Certificate of Substantial Completion or Final Acceptance; nor any payment by OWNER to CONTRACTOR under the Contract Documents; nor any use or occupancy of the Work or any part thereof by OWNER; nor any act of Work acceptance by OWNER; nor any failure to do so; nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13; nor any correction of defective Work by OWNER, will constitute an acceptance of Work not in accordance with the Contract Documents, or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16 The making and acceptance of final payment will constitute:

14.16.1 a waiver of all claims by OWNER against CONTRACTOR, except any timely filed third party claims arising from unsettled payment bond claims; from latently defective Work appearing after final inspection pursuant to paragraph 14.11; or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights regarding CONTRACTOR's continuing obligations under the Contract Documents; and

14.16.2 a waiver of all claims by CONTRACTOR against OWNER, other than those previously, properly, and timely made in writing and still unsettled.

ARTICLE 15 -- SUSPENSION OF WORK AND TERMINATION

Owner May Suspend Work:

15.1 OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) cumulative (not necessarily consecutive) calendar days by notice in writing to CONTRACTOR and ENGINEER, which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension, if CONTRACTOR demonstrates an approved claim therefore as provided in Articles 11 and 12. Any increase or decrease in the Contract Price shall be governed by all State and local laws, statutes, codes, ordinances, rules and regulations governing public competitive bidding and Change Orders.

Owner May Terminate:

15.2 Upon the occurrence of any one or more of the following events:

15.2.1 if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise, under any other federal or Texas law in effect at such time, relating to the bankruptcy or insolvency;

15.2.2 if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or Texas law in effect at the time relating to bankruptcy or insolvency;

15.2.3 if CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.4 if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of the property of CONTRACTOR is for the purpose of enforcing a lien against such CONTRACTOR property, or for the purpose of general administration of such CONTRACTOR property, for the benefit of CONTRACTOR's creditors;

15.2.5 if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.6 if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including but not limited to, failure to supply sufficient skilled workers or equipment, or failure to adhere to the Progress Schedule established under paragraph 2.9, as revised from time to time);

15.2.7 if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.8 if CONTRACTOR disregards the rights of OWNER; or

15.2.9 if CONTRACTOR otherwise violates in any substantial and material way, any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR and the surety seven (7) calendar days written notice, and to the extent permitted by Laws and Regulations: terminate the services of CONTRACTOR; exclude CONTRACTOR from the Project site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the Project site; and use the same to the full extent they could be used by CONTRACTOR (without OWNER liability to CONTRACTOR for trespass or conversion), and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the OWNER's direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of ENGINEER, other engineers, architects, attorneys and other professionals and court costs), such excess will be paid to CONTRACTOR or surety. If such OWNER costs exceed such unpaid balance of the Contract Price, CONTRACTOR or surety shall pay the difference to

OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph, OWNER shall not be required to obtain the lowest price for the Work performed.

15.3 Where CONTRACTOR's services have been so terminated by OWNER, that termination will not affect any rights or remedies of OWNER under this continuing Agreement against CONTRACTOR then existing, or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from ongoing liability under this Agreement.

15.4 Upon seven (7) calendar days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement for OWNER's convenience. In such case, CONTRACTOR shall mitigate demobilization costs as best as possible and be paid for all Work properly executed and expenses sustained, plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of CONTRACTOR's engineers, architects, attorneys and other professionals).

ARTICLE 16 -- TIME FOR SUBSTANTIAL COMPLETION AND LIQUIDATED DAMAGES.

16.1. IT IS HEREBY UNDERSTOOD AND MUTUALLY AGREED, BY AND BETWEEN THE PARTIES HERETO, THAT THE DATE OF BEGINNING, RATE OF PROGRESS AND THE TIME FOR SUBSTANTIAL COMPLETION OF THE WORK TO BE PERFORMED HEREUNDER ARE ESSENTIAL CONDITIONS OF THIS CONTRACT; and it is further mutually understood and agreed, by and between the Parties hereto, that the time to perform the Work embraced in this Contract shall be commenced on a date to be specified in the Notice to Proceed.

16.2 CONTRACTOR hereby agrees that said Work shall be prosecuted regularly, diligently, and uninterrupted at such rate of progress as will insure Substantial Completion thereof within the time specified. It is expressly understood and mutually agreed, by and between the Parties hereto, that the time for the Substantial Completion of the Work described herein in calendar days is a reasonable time for Substantial Completion of same, taking into consideration the average climatic range and weather conditions the CONTRACTOR must reasonably anticipate is already included in the calculation of the performance time specified herein, and CONTRACTOR has assessed the usual industrial and labor conditions prevailing in the Cameron County area.

16.3 If CONTRACTOR shall neglect, fail or refuse to Substantially Complete the Work within the mutually agreed to time herein specified, then CONTRACTOR does hereby agree, as a part of the consideration for the awarding of this Contract, to pay the OWNER the mutually agreed to amount specified in the Construction Agreement, not as a penalty, but as liquidated damages for such breach of Contract for each and every calendar day that CONTRACTOR shall be in default, after the time stipulated in the Contract Documents for Substantially Completing the Work.

16.4 The damage to OWNER by reason of this Work not being Substantially Completed as of the mutually agreed to performance time period are incapable of definite ascertainment by either Party, and therefore the Parties hereto have mutually fixed and limited such damages to the sum stipulated in the Construction Agreement for each calendar day the Project runs beyond such Substantial Completion date, and the mutual agreement for such damages constitutes a part of the consideration for entering the Agreement. It is further mutually agreed that **TIME IS OF THE ESSENCE** for each and every portion of this Agreement and of the Specifications, wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract, any additional time is allowed for the Substantial Completion of any Work, the new time fixed by such extension shall also be **OF THE ESSENCE** for this Agreement. Provided that CONTRACTOR shall not be assessed with the mutually agreed to liquidated damages or any excess cost when the delay in the Substantial Completion of Work is due:

16.4.1 To any preference, priority or allocation order duly issued by the United States Federal Government.

16.4.2 To unforeseeable causes beyond the control and without the fault or negligence of CONTRACTOR, including, but not restricted to: Acts of God; or of the public enemy; acts of the OWNER; acts of another contractor in the performance of a separate contract with the OWNER; fires; floods exceeding the 100 year frequency in Cameron County, Texas; epidemics; quarantine restrictions; strikes; freight embargoes and unusually severe weather not customary for the Cameron County, Texas area and not already included in the calculation of the performance time specified herein.

16.4.3 To any delays of Subcontractors and/or CONTRACTOR's equipment/material suppliers occasioned by any of the causes specified in 16.4.1 or 16.4.2.

16.4.4 Provided further, that CONTRACTOR shall immediately attempt to mitigate the impacts of the delay, and within seven (7) calendar days from the beginning of such delay, notify OWNER, in writing, of the causes for the delay. ENGINEER and OWNER shall then ascertain the facts and extent of the delay and OWNER will notify CONTRACTOR within a reasonable time of OWNER's decision in the matter regarding any adjustment to the Contract Time and a mutually acceptable Project Schedule recovery plan.

ARTICLE 17 -- MISCELLANEOUS

Giving Notice:

17.1 Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly performed if delivered in person to the CONTRACTOR's Project Superintendent or mailed to an officer of the corporation in the case of the CONTRACTOR; or to the General Manager and CEO of the BPUB in the case of the OWNER; or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the provider of the notice. **PROVIDING TIMELY NOTICE AS REQUIRED BY THE NUMEROUS PARAGRAPHS HEREIN IS A MUTUALLY AGREED TO ESSENTIAL TERM OF THIS CONTRACT FOR BOTH PARTIES, AND FAILURE TO**

PROVIDE SAME CONSTITUTES A MATERIAL BREACH OF THE CONTRACT AND A WAIVER OF CERTAIN REMEDIES THAT OTHERWISE WOULD HAVE BEEN AVAILABLE TO A PARTY HEREUNDER HAD PROPER TIMELY NOTICE BEEN PROVIDED.

Computation of Calendar Day Time:

17.2 When any period of time is referred to in the Contract Documents by "days", and the OWNER'S format for scheduling the performance time on the Project is by utilizing calendar days in lieu of "working days," it will be computed as calendar days, to exclude the first and include the last calendar day of such measured period. If the last calendar day of any such period falls on a calendar day listed as a local BPUB holiday by the Contract Documents, such calendar day will be omitted from the computation.

17.2.1 A calendar day consists of twenty-four (24) hours and is measured from midnight on one day, to the next midnight, and shall constitute a single calendar day.

General:

17.3 Should OWNER suffer injury or damage to person or property because of any error, omission or negligent act of the CONTRACTOR, or of any of the CONTRACTOR's, Subcontractor's, employees or agents, or others for whose negligent acts and/or omissions CONTRACTOR is legally liable, OWNER's claim will be made in writing to the CONTRACTOR within a reasonable time of the first occurrence or observation of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for, or a waiver of, the legal provisions of any applicable statute of limitations or repose.

17.4 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the Parties hereto, and, in particular but without limitation, the conditions, warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.32, 13.1, 13.12, 13.14, 14.3 and 15.2, and all of the rights and remedies available to OWNER thereunder; are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to OWNER which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this paragraph 17.4 will be as effective as if repeated specifically in all the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, conditions, warranties and guarantees made in the Contract Documents will survive the execution, final payment and termination or completion of the Agreement. All CONTRACTOR recitations contained in any document required by OWNER, whether delivered at the time of the execution of the Construction Agreement, or at a later date, shall constitute legal and binding representations, warranties and guarantees by CONTRACTOR herein.

17.5 CONTRACTOR shall comply with the "anti-kickback" provisions of the Copeland Act now codified at 18 U. S. C. A. §874, and all amendments or modifications of the original Act of June 13, 1934.

SUPPLEMENTARY CONDITIONS

SECTION 1 - WAGE AND LABOR STANDARD PROVISIONS - PARTIAL-FEDERALLY FUNDED CONSTRUCTION

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1. GENERAL STATEMENT

This is a Partial Federally funded and competitively bid Public Works Contract and Article 5159a, Revised Civil Statutes of Texas, as amended, requires that not less than the general prevailing wage rates (minimum hourly base pay and minimum hourly fringe benefit contribution) for work of similar character be paid to Contractor and Subcontractor employees. These local prevailing and adopted wage rates are derived from the most current applicable federal prevailing wage rates for Cameron County, Texas as published by the United States Department of Labor, (DOL) Dallas, Texas. Copies of the wage rates applicable to the Project at the time of bidding are contained at the end of this Supplementary Conditions Section 1, and are included instruments of this Contract and full compliance with same shall be required.

Any deviation from Wage and Labor Standard Provisions compliance may be cause for OWNER's withholding either interim or final payment to the CONTRACTOR until such deviations are properly corrected.

2. OWNER'S FINANCE DEPARTMENT WAGE & HOUR OFFICE, PROJECT RESPONSIBILITIES

The OWNER's FINANCE DEPARTMENT is primarily responsible for all Wage and Labor Standard Provisions investigation and enforcement and will monitor CONTRACTOR/Subcontractor practices to assure the OWNER that:

- a. Appropriate weekly compliance statements and payroll records are submitted to the OWNER by the CONTRACTOR/Subcontractors and that such are reviewed for compliance with Wage and Labor Standard Provisions.
- b. Apprentices/trainees working on the Project are properly identified by CONTRACTOR/Subcontractor on payroll records and documented as being included in programs currently sanctioned by appropriate federal or Texas regulatory agencies.
- c. Applicable Wage Determination Decisions, including any applicable modifications, and related statements are posted at the Project Work site by the CONTRACTOR and that proper job classifications and commensurate minimum hourly base and any applicable fringe wage rates are paid.
- d. Employees are periodically interviewed (at random) on each Project as required.
- e. That no person employed by CONTRACTOR/Subcontractor is induced against his will, by any means, to give up any part of the compensation to which he is otherwise entitled.
- f. That any and all periodic administrative directives to the Wage & Hour Monitor (TITLE) from the OWNER's Finance Department and Board of Trustees are being implemented.

3. CLAIMS & DISPUTES PERTAINING TO WAGE RATES

Claims and disputes not promptly and routinely settled by the CONTRACTOR/Subcontractor and employees pertaining to wage rates, or to job classifications of labor employed upon the Work covered by this Contract, shall be reported by the employee in writing, within sixty (60) Calendar Days of employee's receipt of any allegedly incorrect classification, wage or benefit report, to the Wage & Hour Monitor for further investigation. Claims and disputes not reported by the employee to the Wage & Hour Monitor in writing within the sixty (60) Calendar Day period shall be deemed waived by the employee for the purposes of the OWNER administering and enforcing the OWNER's Contract rights against the CONTRACTOR on behalf of the employee. Waiver by the employee of this OWNER intervention shall not constitute waiver by the OWNER or employee to independently pursue contractual rights it has against the CONTRACTOR/Subcontractor for breach of Contract and other sanctions available to enforce the Wage and Labor Standard Provisions.

4. BREACH OF WAGE AND LABOR STANDARD PROVISIONS

The OWNER reserves the right to terminate this Contract for cause if the CONTRACTOR/Subcontractors shall knowingly and continuously breach, without timely restitution or cure, any of these governing Wage and Labor Standard Provisions. A knowing and unremedied proven violation of these Wage and Labor Standard Provisions may also be grounds for a "non-responsibility" determination by OWNER thereby jeopardizing CONTRACTOR/Subcontractor from future OWNER contracts for lack of responsibility to perform future work, as determined by the OWNER. Recurrent violations, whether remedied or not, will be considered by the OWNER when assessing the responsibility history of a potential contractor/subcontractor prior to competitive award of future OWNER Public Works projects. The general OWNER remedies stated in this paragraph 4. above, are not exhaustive and not cumulative, for the OWNER reserves legal and contractual rights to other specific remedies outlined herein below and in other parts of this Contract and as are allowed by applicable OWNER resolutions, Texas and federal statutes.

5. EMPLOYMENT OF LABORERS/MECHANICS NOT LISTED IN WAGE DETERMINATION DECISION

In the event the CONTRACTOR/Subcontractor discovers that construction of a particular Work element requires a certain employee classification and skill that is not listed in the wage determination decision contained in the original Contract Documents, CONTRACTOR/Subcontractors will make prompt inquiry (at least twenty-one (21) Calendar Days before bidding, if possible) to the OWNER identifying that class of laborers/mechanics not listed in the current pre-bid wage determination decision who are intended to be employed, or who are being employed, under the Contract. Using his best judgment and information resources available to him at the time, and any similar, prior OWNER or Federal Department of Labor decisions, the Wage & Hour Monitor, shall

classify said laborers/mechanics by issuing a special local wage determination decision to the bidders or CONTRACTOR/Subcontractor, which shall be enforced by the OWNER.

6. MINIMUM WAGE

All laborers/mechanics employed to construct the Work governed by this Contract shall be paid not less than weekly the full amount of wages due (minimum hourly base pay and any applicable minimum hourly fringe benefit contribution for all hours worked, including overtime) for the immediately preceding pay period, computed at wage and fringe rates not less than those contained in the wage determination decision included in this Contract. Only payroll deductions as are mandated by Texas or federal law, and those legal deductions previously approved in writing by the employee, or as are otherwise permitted by Texas or federal law, may be withheld by the CONTRACTOR/Subcontractor.

Should the CONTRACTOR/Subcontractor subscribe to fringe benefit programs for employees, such programs shall be fully approved by the OWNER in adopting a previous U.S. Department of Labor decision on such fringe benefit programs or by applying DOL criteria, in rendering a local decision on the adequacy of the fringe benefit programs. The approved programs shall be in place at the time of OWNER's Contract execution and the provisions thereof shall be disclosed to the CONTRACTOR, for legal review prior to Project commencement, if a written request for same is submitted by CONTRACTOR/Subcontractor prior to CONTRACTOR's execution of the Construction Agreement.

Regular CONTRACTOR/Subcontractor contributions made to, or costs incurred for, approved fringe benefit plans, funds or other benefit programs that cover periods of time greater than the one week payroll period (e.g. monthly or quarterly, etc.) shall be prorated by the CONTRACTOR/Subcontractor on weekly CONTRACTOR payroll records to reflect the equivalent value of the hourly and weekly summary of fringe benefits per employee.

7. OVERTIME COMPENSATION ON PARTIAL-FEDERALLY FUNDED PROJECTS

No CONTRACTOR/Subcontractor contracting for any part of the federally funded Contract Work (except for Project site related security guard services), which may require or involve the employment of laborers/mechanics, shall require or permit any laborer/mechanic in any seven (7) Calendar Day Work period in which he, she is employed on such Work, to Work in excess of forty (40) hours in such Work period, unless said laborer/mechanic receives compensation at a rate not less than one and one-half (1 ½) times the basic hourly rate of pay for all hours worked in excess of forty (40) hours in a seven (7) Calendar Day Work period. Any applicable fringe benefits must be paid for straight time and overtime; however, fringe benefits are not included when computing the overtime rate.

8. PAYMENT OF CASH EQUIVALENT FRINGE BENEFITS

The CONTRACTOR/Subcontractor is allowed to pay a minimum hourly cash equivalent of any applicable minimum hourly fringe benefits listed in the wage determination decision, in lieu of the contribution of benefits to a permissible fringe benefit plan, for all hours worked, including overtime, as described in paragraphs 6. and 7. above. An employee is not allowed to receive less than the minimum hourly basic rate of pay specified in the applicable wage determination decision.

9. WORK CONDUCTED ON HOLIDAYS-PARTIAL-FEDERALLY FUNDED PROJECTS

If a laborer/mechanic is employed in the normal course and scope of his or her Work on the jobsite on New Year's Day, Martin Luther King Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or any additional local OWNER holidays specified by the OWNER in the Contract Documents or the Calendar Days observed as such in any given year, Work shall be paid for at no less than one and one-half (1 1/2) times the regular minimum hourly base pay regardless of the total number of hours the laborer/mechanic has accumulated during the pay period.

10. UNDERPAYMENT OF WAGES OR SALARIES

- a. When a "full investigation" (as called for in and as construed under Article 5159a, Sec. 2 and as may be further generally described in any administrative directive to the Wage & Hour Monitor from the OWNER), evidences underpayment of wages by CONTRACTOR/Subcontractor to laborers/mechanics employed upon the Work covered by this Contract, the OWNER, in addition to such other rights as may be afforded it under Texas and/or federal law and/or this Contract, shall withhold from the CONTRACTOR, out of any payments (interim progress and/or final) due the CONTRACTOR, so much thereof as the OWNER may consider necessary to secure ultimate payment by the appropriate entity to such laborers/mechanics, of full wages required by this Contract, plus possible penalty (See b. below). The amount so withheld, excluding any possible penalty to be retained by the OWNER, may be disbursed at an appropriate time after "full investigation" by the Wage & Hour Monitor, for and on behalf of the CONTRACTOR/Subcontractor (as may be appropriate), to the respective laborers/mechanics to whom the same is due, or on their behalf to fringe benefit plans, funds, or programs for any type of minimum fringe benefits prescribed in the applicable wage determination decision.
- b. Article 5159a, Revised Civil Statutes of Texas, as amended, states that the CONTRACTOR shall forfeit as a penalty to the OWNER the sum of sixty dollars (\$60.00) for each Calendar Day, or portion thereof, for each laborer, workman, or mechanic, who is paid less than the said stipulated rate for any Work done under this Contract, whether by the CONTRACTOR himself, or by any Subcontractor working under him. Pursuant to and supplemental to this statutory authority, the OWNER and the CONTRACTOR/Subcontractor contractually acknowledge and

agree that said sixty dollar (\$60.00) statutory penalty shall apply to any violations of paragraphs 6,7, or 9 herein, resulting from CONTRACTOR/Subcontractor underpayment violations.

- c. If unpaid or underpaid workers cannot be located by the CONTRACTOR/Subcontractor or the OWNER after diligent efforts to accomplish same, unpaid or underpaid wages shall be reserved by the OWNER in a special "unfound worker's account" established by the OWNER, for such CONTRACTOR/Subcontractor employees. If after one (1) year from the final acceptance of the Project by the OWNER, workers still cannot be located, in order that the OWNER can make effective interim re-use of the penalty money, such wages and any associated statutory penalties may be used to defray actual costs incurred by the OWNER in attempting to locate said workers, and any remaining monies may then revert back to the OWNER's original funding source for the Project. However, unpaid or underpaid workers for which money was originally reserved are eligible to claim recovery from the OWNER for a period of not-to-exceed three (3) years from the final acceptance of the Project by the OWNER. Claimant recovery after expiration of the three (3) year period is prohibited.

11. DISPLAYING WAGE DETERMINATION DECISIONS/AND NOTICE TO LABORERS/MECHANICS STATEMENT

The applicable wage determination decision(s) as described at the end of this Supplementary Conditions Section 1 (and as specifically included in each project contract), outlining the various worker classifications and mandatory minimum wages and minimum hourly fringe benefit deductions, if any, of laborers/mechanics employed and to be employed upon the Work covered by this CONTRACT, shall be displayed by the CONTRACTOR/Subcontractor at the site of Work in a conspicuous and prominent public place, readily and routinely accessible to workmen for the duration of the Project. In addition, the CONTRACTOR/Subcontractor agrees with the contents of the following statement, and shall display same, in English and Spanish, near the display of the wage determination decision at the Project site of Work:

NOTICE TO LABORERS/MECHANICS

Both the Brownsville Public Utilities Board and the CONTRACTOR/Subcontractor agree that you must be compensated with not less than the minimum hourly base pay and any required minimum hourly fringe benefit contribution in accordance with the wage rates publicly posted at this jobsite, and as are applicable to the classification of Work you perform.

Additionally, you must be paid not less than one and one-half times (1 ½) your basic hourly rate of pay for any hours worked over 40 in any seven (7) Calendar Day Work period, and for any Work conducted on New Year's Day, Martin Luther King Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day and other possible locally observed holiday(s), or the Calendar Days observed as such in any given year.

Apprentice and trainee hourly wage rates and ratios apply only to apprentices and trainees recognized under approved Federal, or State, apprenticeship training programs registered with the Bureau of Apprenticeship and Training, U.S. Dept. of Labor.

If you believe that your employer is not paying the posted minimum wage for the type of Work you do, you must make direct inquiry to your employer and also inquire in writing, within sixty (60) Calendar Days of your receipt of any allegedly incorrect wage or benefit check or report, to the BPUB Wage & Hour Monitor. It is mandatory that you promptly file written inquiry of any allegedly incorrect wage or benefit checks or reports with the BPUB's Wage & Hour Monitor within the sixty (60) Calendar Day period, so that you do not waive your potential right of recovery under the provisions of the BPUB's construction Contract that governs this Project.

Both the BPUB and the CONTRACTOR/Subcontractor agree that no laborer/mechanic who files a complaint or inquiry concerning alleged underpayment of wages or benefits, shall be discharged by the employer, or in any other manner be discriminated against by the employer, for filing such complaint or inquiry.

12. PAYROLLS & BASIC PAYROLL RECORDS

- a. The CONTRACTOR and each Subcontractor shall prepare payroll reports in accordance with the "General Guideline" instructions furnished by the OWNER of the Project. Such payroll submittals shall contain the name and address of each such employee, his correct labor classification, rate of pay, daily and weekly number of hours worked, any deductions made, and actual basic hourly and fringe benefits paid. The CONTRACTOR shall submit payroll records each week, and no later than seven (7) working days following completion of the workweek being processed, to the OWNER. These payroll records shall include certified copies of all payrolls of the CONTRACTOR and of his Subcontractors, it being understood that the CONTRACTOR shall be responsible for the submission and general mathematical accuracy of payrolls from all of his Subcontractors. Each such payroll submittal shall be on forms deemed satisfactory to the Wage & Hour Monitor and shall contain a "Weekly Statement of Compliance", as called for by the Contract Documents. Such payrolls will be forwarded to the Wage & Hour Monitor.
- b. Copies of payroll submittals and basic supporting payroll records of the CONTRACTOR/Subcontractors accounting for all laborers/mechanics employed under the Work covered by this Contract, shall be maintained by CONTRACTOR/Subcontractor during the course of the Work, and preserved for a period of three (3) years after completion of the Project. The CONTRACTORS/Subcontractors shall maintain records which demonstrate: any contractor commitment to provide fringe benefits to employees as may be mandated by the applicable wage determination decision; that the plan or program is adjudged financially responsible by the appropriate approving authority, (i.e. U.S. Department of Labor, U.S. Department of Treasury, etc.); and that the provisions, policies, certificates, and description of benefits of the plan or program as may be periodically

amended, have been clearly communicated in a timely manner and in writing, to the laborers/mechanics affected, prior to their performing Work on the Project.

- c. The CONTRACTOR/Subcontractor shall make the above records available for inspection, copying, or transcribing by the Wage & Hour Monitor of the OWNER at reasonable times and locations for purposes of monitoring compliance with this Contract.

13. LABOR DISPUTES

The CONTRACTOR/Subcontractor shall immediately notify the Wage & Hour Monitor or his designated representative of any actual or impending CONTRACTOR/Subcontractor labor dispute which may affect, or is affecting, the Project Performance Schedule of the CONTRACTOR's or any Subcontractor's Work. In addition, the CONTRACTOR/Subcontractor shall consider all appropriate measures to eliminate or minimize the effect of such labor disputes on the Project Progress Schedule, including but not limited to such measures as: promptly seeking injunctive relief if appropriate; seeking appropriate legal or equitable actions or remedies; taking such measures as establishing a reserved gate, as appropriate; if reasonably feasible, seeking other sources of supply or service; and any other measures that may be appropriately utilized to mitigate or eliminate the adverse Project jobsite and scheduling effects of the labor dispute.

14. COMPLAINTS, PROCEEDINGS, OR TESTIMONY BY EMPLOYEES

No laborers/mechanics to whom the wage, salary, or other labor standard provisions of this Contract are applicable shall be discharged, or in any other manner discriminated against by the CONTRACTOR/Subcontractors, because such employee has filed any formal inquiry or complaint, or instituted or caused to be instituted, any legal or equitable proceeding, or has testified, or is about to testify, in any such proceeding under or relating to the wage and labor standards applicable under this Contract.

15. EMPLOYEE INTERVIEWS TO ASSURE WAGE AND LABOR STANDARD COMPLIANCE

CONTRACTOR/Subcontractors shall allow expeditious jobsite entry of the Wage & Hour Monitor displaying and presenting proper OWNER identification credentials to the jobsite superintendent or his representative. While on the jobsite, the Wage & Hour Monitor shall observe all CONTRACTOR jobsite rules and regulations concerning safety, internal security and fire prevention. CONTRACTOR/Subcontractors shall allow Project employees to be separately and confidentially interviewed at random for a reasonable duration of time by the Wage & Hour Monitor to facilitate compliance determinations regarding adherence by the CONTRACTOR/Subcontractor to these Wage and Labor Standard Provisions.

16. "ANTI-KICKBACK" PROVISION

No person employed in the construction or repair of any OWNER public works Project shall be induced, by any means, to give up to any CONTRACTOR/Subcontractor or public official or employee, any part of the hourly and/or fringe benefit compensation to which he or she is otherwise entitled.

17. "FALSE OR DECEPTIVE INFORMATION" PROVISION

Any person employed by the CONTRACTOR/Subcontractor in the construction or repair of any OWNER public works Project, who is proven to have knowingly and willfully falsified, concealed or covered up by any deceptive trick, scheme, or device a material fact, or made any false, fictitious or fraudulent statement or representation, or made or used any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be permanently removed from the Project jobsite by the CONTRACTOR/Subcontractor. The OWNER reserves the right to terminate this Contract for cause as a result of serious and uncured violations of this provision.

18. EMPLOYMENT OF APPRENTICES/TRAINEES

- a. Apprentices will be permitted to work at less than the predetermined rate for the Work they perform when they are employed and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship & Training, or with a Texas Apprenticeship Agency recognized by the Bureau, or if a person is employed in his first ninety (90) Calendar Days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship & Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not a trainee as defined in (b) below, or is not registered or otherwise employed as stated above, shall be paid the wage rate for the classification of Work he actually performs. The CONTRACTOR/Subcontractor is required to furnish to the Wage & Hour Monitor of the OWNER, a copy of the certification, along with the payroll record that the employee is first listed on. The wage rate paid apprentices shall be not less than the specified rate in the registered program for the apprentice's level of progress expressed as the appropriate percentage of the journeyman's rate contained in the applicable wage determination decision.
- b. Trainees will be permitted to work at less than the predetermined rate for the Work performed when they are employed pursuant to an individually registered program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen shall not be greater than that permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress. Any employee listed on the payroll at a trainee wage rate, who is not registered and participating in a training plan approved by

the Employment and Training Administration, shall be paid not less than the wage rate determined by the classification of Work he actually performs. The CONTRACTOR/Subcontractor is required to furnish a copy of the trainee program certification, registration of employee-trainees, ratios and wage rates prescribed in the program, along with the payroll record that the employee is first listed on, to the Wage & Hour Monitor of the OWNER. In the event the Employment and Training Administration withdraws approval of a training program, the CONTRACTOR/Subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the Work performed until an acceptable program is approved by the Employment and Training Administration.

- c. Paragraphs 18.a. and b. above shall not operate to exclude training programs approved by the OFCCP, United States Department of Labor and as adopted by the Associated General Contractors (AGC) of Texas, Highway, Heavy, Utilities and Industrial Branch. Guidelines for these training programs shall be the same as those established for federally funded projects. This sub-paragraph 15.c. shall not apply to those portions of a project deemed to be building construction.
- d. **RATIOS, APPRENTICE TO JOURNEYMAN:**

The Ratio of Apprentice to Journeyman for this Project shall be the same as the Ratio permitted under the plan approved by the Employment and Training Administration, Bureau of Apprenticeship and Training, U.S. Department of Labor, by craft. A copy of the allowable Ratios is included with the applicable Wage Determination Decision at the end of this Supplementary Conditions Section 1.

When a "full investigation" (as called for in, and as construed under Article 5159a, Sec. 2), evidences a violation of the Apprentice or Trainee to Journeyman ratios effective for CONTRACTOR/Subcontractor employees working on this Contract, the OWNER, in addition to such other rights as may be afforded it under Texas and/or federal law and/or other sections of this Contract (especially paragraph 10 Underpayment of Wages), shall withhold from the CONTRACTOR, out of any payments (interim progress and/or final) due the CONTRACTOR, the liquidated damages (not a penalty) sum of seventy-five dollars (\$75.00) for each Calendar Day, or portion thereof, for each certified Apprentice or Trainee employee assigned to a Journeyman that exceeds the maximum allowable Apprentice/Trainee to Journeyman ratio stipulated for any Work done under this Contract, whether by the CONTRACTOR himself, or by any Subcontractor working under him.

19. JOBSITE CONDITIONS

CONTRACTORS/Subcontractors will not allow any person employed for the Project to work in surroundings or under construction conditions which are unsanitary, unhealthy, hazardous, or dangerous as governed by industry standards and appropriate local, Texas and federal statutes, ordinances, and regulatory guidelines.

20. EMPLOYMENT OF CERTAIN PERSONS PROHIBITED

- a. The CONTRACTOR/Subcontractor shall knowingly only employ persons of appropriate ages commensurate with the degree of required skill, strength, maturity and judgment associated with the activity to be engaged in, but not less than the age of fourteen (14) years, as governed by Chapter 51 "Employment of Children", Texas Labor Code, (Vernon's Texas Codes Annotated) (as may be amended), and Texas Department of Labor and Standards rulings and interpretations associated with that statute. It is hereby noted that in some circumstances generally governed by this paragraph, a federal statute (see: Fair Labor Standards Act, 29 USCS Section 212; Volume 6A of the Bureau of National Affairs Wage Hour Manual at Paragraph 96:1; "Child Labor Requirements in Nonagricultural Occupations" WH Publication 1330, July 1978 as may be amended), could pre-empt the Texas Statute and therefore be the controlling law on this subject. The CONTRACTOR/Subcontractor should seek clarification from Texas and federal agencies and legal counsel when hiring adolescent employees for particular job classifications.
- b. Prohibited persons not to be employed are also those persons who, at the time of employment for this Contract, are serving sentence in a penal or correctional institution, except that prior approval by the Wage & Hour Monitor is required to employ any person participating in a supervised work release or furlough program that is sanctioned by appropriate Texas or federal correctional agencies.
- c. The CONTRACTOR/Subcontractors shall be responsible for compliance with the provisions of the "Immigration Reform and Control Act of 1986" Public Law 99-603, and any related Texas enabling or implementing statutes, especially as they apply in combination to the unlawful employment of aliens and unfair immigration-related employment practices affecting this Contract.

21. PROVISIONS TO BE INCLUDED IN SUBCONTRACTS

The CONTRACTOR shall cause these Wage and Labor Standard Provisions, or reasonably similar contextual adaptations hereof, and any other appropriate Texas and federal labor provisions, to be inserted (or referenced by "flow down" provisions) in all subcontracts relative to the Work to bind Subcontractors (and any sub-tier subcontractors) to the same Wage and Labor Standards as contained in these Supplementary Conditions and other Contract Documents insofar as applicable to the Work of Subcontractors or sub-tier subcontractors, and to give the CONTRACTOR similar, if not greater, general contractual authority over the Subcontractor, or sub-tier subcontractors, as the OWNER may exercise over the CONTRACTOR.

General Decision Number: TX20230003 01/06/2023
 Superseded General Decision Number: TX20220003
 State: Texas

Construction Types: Heavy and Highway
 Counties: Cameron, Hidalgo and Webb Counties in Texas.

HEAVY & HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

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|-------------------------|------------------|
| Modification Number | Publication Date |
| 0 | 01/06/2023 |
| SUTX2011-003 08/02/2011 | |

| | Rates | Fringes |
|---|----------|---------|
| CEMENT MASON/CONCRETE | | |
| FINISHER (Paving & Structures)..... | \$ 12.46 | ** |
| FORM BUILDER/FORM SETTER | | |
| (Structures)..... | \$ 12.30 | ** |
| FORM SETTER (Paving & Curb)..... | \$ 12.16 | ** |
| LABORER | | |
| Asphalt Raker..... | \$ 10.61 | ** |
| Flagger..... | \$ 9.10 | ** |
| Laborer, Common..... | \$ 9.86 | ** |

Laborer, Utility.....\$ 11.53 **
 Pipelayer.....\$ 11.87 **
 Work Zone Barricade
 Servicer.....\$ 12.88 **

POWER EQUIPMENT OPERATOR:

Asphalt Distributor.....\$ 13.48 **
 Asphalt Paving Machine.....\$ 12.25 **
 Broom or Sweeper.....\$ 10.33 **
 Crane, Lattice Boom 80
 Tons or Less.....\$ 14.39 **
 Crawler Tractor.....\$ 16.63
 Excavator, 50,000 lbs or
 less.....\$ 12.56 **
 Excavator, over 50,000 lbs.....\$ 15.23 **
 Foundation Drill, Truck
 Mounted.....\$ 16.86
 Front End Loader Operator,
 Over 3 CY.....\$ 13.69 **
 Front End Loader, 3 CY or
 less.....\$ 13.49 **
 Loader/Backhoe.....\$ 12.77 **
 Mechanic.....\$ 15.47 **
 Milling Machine.....\$ 14.64 **
 Motor Grader Operator,
 Rough.....\$ 14.62 **
 Motor Grader, Fine Grade.....\$ 16.52
 Scraper.....\$ 11.07 **

Servicer.....\$ 12.34 **
 Steel Worker (Reinforcing).....\$ 14.07 **

TRUCK DRIVER

Lowboy-Float.....\$ 13.63 **
 Single Axle.....\$ 10.82 **
 Single or Tandem Axle Dump.....\$ 14.53 **
 Tandem Axle Tractor with
 Semi Trailer.....\$ 12.12 **

WELDER.....\$ 14.02 **

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

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

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 <https://www.dol.gov/agencies/whd/government-contracts>.

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 National Office because National Office has 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

PART II – TECHNICAL SPECIFICATIONS

RESTORE ACT
FINANCIAL ASSISTANCE STANDARD TERMS
AND CONDITIONS AND PROGRAM-SPECIFIC
TERMS AND CONDITIONS

U.S. Department of the Treasury

February 2022



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RESTORE ACT FINANCIAL ASSISTANCE STANDARD TERMS AND CONDITIONS AND PROGRAM-SPECIFIC TERMS AND CONDITIONS

PREFACE

A grant agreement is comprised of the following documents:

1. A Notice of Award from the Department of the Treasury (“Treasury”);
2. The RESTORE Act Financial Assistance Standard Terms and Conditions (“Standard Terms and Conditions”);
3. The RESTORE Act Financial Assistance Program-Specific Terms and Conditions (“Program-Specific Terms and Conditions”);
4. An approved application, including all documents, certifications, and assurances that are part of the approved application;
5. An approved scope of work;
6. Any approved budget; and,
7. Any special terms and conditions applied by Treasury to the award (“Special Award Conditions”).

The recipient must comply with—and require each of its subrecipients, contractors, and subcontractors employed in the completion of the activity, project, or program to comply with—the RESTORE Act, Treasury’s implementing regulations at 31 C.F.R. Part 34, all applicable federal statutes, regulations, executive orders (EOs), Office of Management and Budget (OMB) circulars, any program guidance issued by Treasury (including the RESTORE Frequently Asked Questions), Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions of this federal financial assistance award (“Award”), as applicable, in addition to the certifications and assurances required at the time of application.

Any inconsistency or conflict in Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions of this Award will be resolved according to the following order of precedence: federal laws, Executive Orders, federal regulations, applicable notices published in the Federal Register, OMB circulars, Treasury’s Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions.

Some of these Standard Terms and Conditions contain, by reference or substance, a summary of pertinent federal statutes, federal regulations published in the Federal Register (Fed. Reg.) or Code of Federal Regulations (C.F.R.), EOs, or OMB circulars. In particular, these Standard Terms and Conditions incorporate many of the provisions contained in OMB’s Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (“Uniform Guidance,” 2 C.F.R. Part 200), which supersedes former OMB Circular A-102 (the former grants management common rule), OMB Circular A-133 (single audit requirements), and all former OMB circulars containing the cost principles for grants and cooperative agreements. To the extent that it is a summary, such a provision is not in derogation of, or an amendment to, any such statute, regulation, EO, or OMB circular. Unless a definition is provided here, definitions can be found in the RESTORE Act (Public Law No. 112-141 (July 6, 2012), Treasury’s implementing regulations (79 Fed. Reg. 48039 (Aug. 15, 2014) and 79 Fed. Reg. 61236 (Oct. 10, 2014), as codified at 31 C.F.R. Part 34), or 2 C.F.R. Part 200.

A PROGRAM-SPECIFIC TERMS AND CONDITIONS - AWARDS UNDER THE DIRECT COMPONENT

In addition to all the Standard Terms and Conditions described in Sections C through T of this document, all Treasury RESTORE Act awards made under the Direct Component include the following Program-Specific Terms and Conditions:

1. **Administrative Costs**

- a. Administrative costs are defined as indirect costs for administration incurred by the recipient that are allocable to activities authorized under the RESTORE Act, as specified in 31 C.F.R. § 34.2. Administrative costs do not include:
 - i. Direct costs that directly support the scope of work and are identified as direct costs in the approved award budget;
 - ii. Indirect costs that are identified specifically with, or readily assignable to facilities, as defined in 2 C.F.R. § 200.414; and
 - iii. Indirect costs of subrecipients.
- b. Of the amounts received from Treasury under the Direct Component, not more than three percent may be used for administrative costs. The three percent limit on administrative costs may be applied to the total amount of funds received by a recipient either on a grant-by-grant basis or on an aggregate basis. For the latter method, amounts used for administrative costs may not at any time exceed three percent of the aggregate of:
 - i. The amounts received under a component (i.e., Direct Component or Centers of Excellence) by a recipient, beginning with the first grant through the most recent grant, and
 - ii. The amounts in the Trust Fund that are allocated to, but not yet received by, the grantee under 31 C.F.R. § 34.103, consistent with the definition of administrative costs in 31 C.F.R. § 34.2.
- c. Up to 100 percent of program income, as defined in 2 C.F.R. § 200.1 and elaborated in 2 C.F.R. § 200.307, may be used to pay for allowable administrative costs, subject to the three percent cap. Program income may also be used to defray other allowable costs under the award.

2. **Oil Spill Liability Trust Fund**

The recipient must not seek any compensation for the approved program or project from the Oil Spill Liability Trust Fund. If the recipient is authorized to make subawards, the recipient must not use Direct Component funds to make subawards to fund activities for which any claim for compensation was filed and paid out by the Oil Spill Liability Trust Fund after July 6, 2012.

3. **Remedies for Noncompliance**

- a. If Treasury determines that the recipient has expended Direct Component funds to cover the cost of any ineligible activities, in addition to the remedies available in Section M of these Standard Terms and Conditions, per 31 C.F.R. § 34.804, Treasury will make no additional payments to the recipient from the Gulf Coast Restoration Trust Fund (Trust Fund), including no payments from the Trust Fund for

activities, projects, or programs until the recipient has either (1) deposited an amount equal to the amount expended for the ineligible activities in the Trust Fund, or (2) Treasury has authorized the recipient to expend an equal amount from the recipient's own funds for an activity that meets the requirements of the RESTORE Act.

- b. If Treasury determines the recipient has materially violated the terms of this Award, Treasury will make no additional funds available to the recipient from any part of the Trust Fund until the recipient corrects the violation.

B PROGRAM-SPECIFIC TERMS AND CONDITIONS - AWARDS UNDER THE CENTERS OF EXCELLENCE RESEARCH GRANTS PROGRAM

In addition to all the Standard Terms and Conditions described in Sections C through T of this document, all Treasury RESTORE Act awards under the Centers of Excellence Research Grants Program include the following Program-Specific Terms and Conditions:

1. Allowable Costs

In addition to the prohibitions contained in 2 C.F.R. Part 200, Subpart E (*Cost Principles*), the following costs are unallowable unless approved in writing by Treasury:

- a. Construction, including the alteration, repair, or rehabilitation of existing structures;
- b. Facilities costs that are allowable as indirect costs in a federally approved negotiated indirect cost rate; and
- c. Acquisition of land or interests in land.

2. Prior Approval for Changes in Centers of Excellence

- a. The recipient must immediately notify Treasury if it anticipates selecting a new entity or consortium to serve as a Center of Excellence or making other changes to the initial selection of Center(s) of Excellence described in the scope of work.
- b. After the recipient notifies Treasury pursuant to (a) and finalizes the selection, the recipient must promptly inform Treasury of the following:
 - i. Name of the Center of Excellence and the entity selected to administer it, including the names of member organizations if the entity is a consortium;
 - ii. The Data Universal Numbering System (DUNS) Number of the entity or Unique Entity Identifier (UEI) Number as applicable;
 - iii. Location of the entity;
 - iv. The discipline or disciplines, as set forth in Section 1605(d) of the RESTORE Act and Treasury's implementing regulations at 31 C.F.R. § 34.704(b), that will serve as a focus of research for the selected Center or Centers of Excellence;
 - v. Documentation of the competitive process used to select the Center or Centers of Excellence, including all documentation to demonstrate the recipient complied with the selection requirements set forth in Section 1605 of the RESTORE Act and Treasury's implementing regulations at 31 C.F.R. § 34.704(b); and
 - vi. The estimated budget for the Center, including the total allocation of funded dollars for the Center.

3. Performance Reports

In addition to the reporting requirements in Section F, pursuant to 31 C.F.R. § 34.706, the recipient must submit an annual report to the Gulf Coast Ecosystem Restoration Council ("Council"), in a form prescribed by the Council that includes information on subrecipients, subaward amounts, disciplines addressed, and any other information required by the Council. When the subrecipient is a consortium, the annual report must also identify the

consortium members. This information will be included in the Council's annual report to Congress. The recipient must provide a copy of this report to Treasury when it submits the report to the Council.

STANDARD TERMS AND CONDITIONS

AWARDS UNDER THE DIRECT COMPONENT AND THE CENTERS OF EXCELLENCE RESEARCH GRANTS PROGRAM

C APPLICABLE LAWS, REGULATIONS, AND PROGRAM REQUIREMENTS

This Award is subject to the following federal laws, regulations, and requirements. This list is not exclusive:

1. The RESTORE Act, Pub. L. No. 112-141 (July 6, 2012);
2. Treasury's implementing regulations, 31 C.F.R. Part 34;
3. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 C.F.R. Part 200, Subparts A through F, and any Treasury regulations incorporating these requirements;
4. OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement), 2 C.F.R. Part 180 including the requirement to include a term or condition in all lower-tier covered transactions (contracts and subcontracts described in 2 C.F.R. Part 180, subpart B) that the award is subject to 2 C.F.R. Part 180 and Treasury's implementing regulations at 31 C.F.R. Part 19;
5. Governmentwide Requirements for Drug-Free Workplace (Financial Assistance), 31 C.F.R. Part 20;
6. New Restrictions on Lobbying, 31 C.F.R. Part 21;
7. Reporting Subaward and Executive Compensation Information, 2 C.F.R. Part 170;
8. Universal Identifier and System for Award Management (SAM), 2 C.F.R. Part 25;
9. Recipient Integrity and Performance Matters, Appendix XII to 2 C.F.R. Part 200;
10. Award Term related to Trafficking in Persons, 2 C.F.R. Part 175;
11. Treasury's RESTORE Act Frequently Asked Questions (FAQs) and other program guidance; and
12. Any special award conditions included in the award.

D USE OF FUNDS AND FINANCIAL REQUIREMENTS

1. **Scope of Work**

The recipient must only use funds obligated and disbursed under this Award for the purpose of carrying out activities described in the attached approved scope of work. The recipient must not incur or pay any expenses under this Award for activities not related to the attached approved scope of work unless Treasury first approves an Award amendment explicitly modifying the approved scope of work to include those activities.

2. **Pre-award Costs**

The recipient may obligate funds under this Award only during the period of performance specified in the Notice of Award, which is the time period during which the recipient may incur new obligations and costs to carry out the work authorized under this Award. The only exception is for costs related to award reporting and closeout after the end of the period of performance, or costs incurred prior to the effective date of this Award, which are allowable only if:

- a. Treasury specifically authorized these costs in writing on or after the issuance date of this Award;
- b. Incurring these costs was necessary for the efficient and timely performance of the scope of work; and
- c. These costs would have been allowable if incurred after the date of the award.

3. **Indirect Costs**

- a. The recipient may only charge indirect costs to this Award if these costs are allowable under 2 C.F.R. Part 200, Subpart E (*Cost Principles*). For Direct Component awards, there is a three percent limit on indirect costs per 31 C.F.R. § 34.204. Please see the RESTORE Act Frequently Asked Questions (FAQs) related to the Direct Component Program for more information on the limitations on indirect costs (administrative costs) at <https://home.treasury.gov/system/files/216/May-2020-Direct-Component-FAQ-Update-final-5-21-2020.pdf>. Indirect costs charged to the award must be consistent with an accepted de minimis rate or the indirect cost rate agreement negotiated between the recipient and its cognizant agency (defined as the federal agency that is responsible for reviewing, negotiating, and approving cost allocation plans or indirect cost proposals, see 2 C.F.R. § 200.1) and must be included in the recipient's budget.
- b. Unallowable direct costs are not recoverable as indirect costs.
- c. The maximum dollar amount of allocable indirect costs charged to this Award shall be the lesser of:
 - i. The line item amount for the indirect costs contained in the approved budget, including all budget revisions approved in writing by the Treasury; or,
 - ii. The total indirect costs allocable to this Award based on the indirect cost rate approved by a cognizant or oversight federal agency and applicable to the period in which the cost was incurred, provided that the rate is approved on or before the Award end date.

4. **Cost Sharing and Budget Limitations**

- a. There is not a cost sharing or matching requirement for Treasury's RESTORE Act grant programs. However, if matching funds are included in the approved award budget, the recipient must obtain and use these matching funds for the purposes of the award.
- b. The recipient shall not request or receive additional funding beyond what was included in the approved application for the attached approved scope of work from any federal or non-federal source without first notifying Treasury.

5. **Program Income**

Program Income is defined in 2 C.F.R. § 200.1 as gross income earned by the non-federal entity that is directly generated by a supported activity or earned as a result of the federal award during the period of performance except as provided by 2 C.F.R. § 200.307(f). As allowed by 2 C.F.R. § 307(b), Treasury authorizes costs incidental to the generation of program income that have not been charged to the award to be deducted from the gross income to determine program income for this award (i.e., net program income). Any program income generated by the recipient or the subrecipient during the period of performance of the award or period of performance of the subrecipient agreement, as applicable, must be included in the approved budget and be used for the purposes of the Award and under the

conditions of these Standard Terms and Conditions and any Special Award Conditions, i.e., solely to accomplish the approved scope of work. All program income determinations are project scope-specific and should be determined prior to award or at the earliest point possible post-award.

6. **Incurring Costs or Obligating Federal Funds Beyond the Expiration Date**

The recipient must not incur costs or obligate funds under this Award for any purpose pertaining to the operation of the activity, project, or program beyond the end of the period of performance. The only costs that are authorized for a period up to 120 days following the end of the period of performance are those strictly associated with closeout activities. Closeout activities are normally limited to the preparation of final progress, financial, and required audit reports unless otherwise approved in writing by Treasury. Under extraordinary circumstances, and at Treasury's sole discretion, Treasury may approve the recipient's request for an extension of the 120-day closeout period.

7. **Tax Refunds**

Refunds of taxes paid under the Federal Insurance Contributions Act (FICA) and the Federal Unemployment Tax Act (FUTA) that are received by the recipient during or after the period of performance must be refunded or credited to Treasury if these taxes were paid out of RESTORE Act funds in accordance with 2 C.F.R. Part 200, Subpart E (*Cost Principles*). The recipient agrees to contact Treasury immediately upon receipt of these refunds.

8. **Requirement to Maintain a Conflict-of-Interest Policy**

Recipient understands and agrees it must maintain a conflict-of-interest policy consistent with 2 C.F.R. § 200.318(c), and that such conflict-of-interest policy is applicable to each activity funded under this award. Recipients and subrecipients must disclose in writing to Treasury or the pass-through agency, as appropriate, any potential conflict of interest affecting the awarded funds in accordance with 2 C.F.R. § 200.112.

9. **Prohibition on Use of Funds for Certain Telecommunications and Video Surveillance Services or Equipment**

- a. Recipients must comply with 2 C.F.R. § 200.216 with respect to obligations and expenditures of Treasury's RESTORE Act grants funded on or after 8/13/2020. As required by 2 C.F.R. § 200.216, Treasury's RESTORE Act recipients and subrecipients are prohibited from obligating or expending grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system or as critical technology as part of any system.
- b. Covered telecommunications equipment or services are defined as follows:
 - i. Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);
 - ii. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);
 - iii. Telecommunications or video surveillance services provided by such entities or using such equipment; or

- iv. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of the People's Republic of China.
- c. Whenever procuring, contracting for, or obtaining telecommunications or video surveillance services or equipment, the recipient must make a good-faith effort to ascertain that none of the equipment or services are from a prohibited source. The recipient must review the list of excluded parties in the System for Award Management (SAM) (<https://www.sam.gov>) for entities excluded from receiving federal awards for "covered telecommunications equipment or services."
- d. The recipient must ensure that the prohibition on covered telecommunications and video surveillance services and equipment flows down to all lower-tier transactions, to include all subawards and contracts.

10. **Limitation on Use of Funds for Research Involving Human Subjects**

- a. No work involving human subjects may be undertaken, conducted, or costs incurred and/or charged to this Award for human subject's research, until the appropriate documentation is approved in writing by Treasury.
- b. The Federal policy for the protection of human subjects (the "Common Rule") as codified in 45 C.F.R. Part 46, Subpart A, defines a human subject as a living individual about whom an investigator conducting research obtains (1) information or biospecimens through intervention or interaction with the individual (e.g., surveys and focus groups), and uses, studies, or analyzes the information or biospecimens or (2) uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens. Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.
- c. The recipient and subrecipient, as appropriate, must maintain appropriate policies and procedures for the protection of human subjects. In the event it becomes evident that human subjects may be involved in this project, the recipient must submit appropriate documentation to Treasury for approval by the appropriate Treasury officials. This documentation may include:
 - i. Documentation establishing approval of the project by an institutional review board (IRB) approved for federal-wide use under Department of Health and Human Services guidelines;
 - ii. Documentation to support an exemption for the project;
 - iii. Documentation to support deferral for an exemption or IRB review; or
 - iv. Documentation of IRB approval of any modification to a prior approved protocol or to an informed consent form.

11. **Limitation on Use of Funds for Foreign Travel**

- a. The recipient and subrecipient may not use funds from this Award for travel outside of the United States unless Treasury provides prior written approval.
- b. The recipient and subrecipient must comply with the provisions of the Fly America Act, as amended, (49 U.S.C. § 40118). The implementing regulations of the Fly America Act are found at 41 C.F.R. §§ 301-10.131–301-10.143.
- c. The Fly America Act requires that federal travelers and others performing U.S. Government-financed air travel must use U.S. flag air carriers, to the extent that service by such carriers is available. Foreign air carriers may be used only in specific instances, such as when a U.S. flag air carrier is unavailable, or use of U.S. flag air carrier service will not accomplish the agency's mission.
- d. One exception to the requirement to fly U.S. flag carriers is transportation provided under a bilateral or multilateral air transport agreement, to which the United States Government and the government of a foreign country are parties, and which the Department of Transportation has determined meets the requirements of the Fly America Act pursuant to 49 U.S.C. § 40118(b). The United States Government has entered into bilateral/multilateral "Open Skies Agreements" (U.S. Government Procured Transportation) that allow federal funded transportation services for travel and cargo movements to use foreign air carriers under certain circumstances. There are multiple "Open Skies Agreements" currently in effect. For more information about the current bilateral and multilateral agreements, visit the GSA website <http://www.gsa.gov/portal/content/103191>. Information on the Open Skies agreements (U.S. Government Procured Transportation) and other specific country agreements may be accessed via the Department of State's website <http://www.state.gov/e/eeb/tra/>.
- e. If a foreign air carrier is anticipated to be used for any portion of travel funded under this Award, the recipient must receive prior approval from Treasury. When requesting such approval, the recipient must provide a justification in accordance with guidance provided by 41 C.F.R. § 301–10.142, which requires the recipient to provide Treasury with the following: name; dates of travel; origin and destination of travel; detailed itinerary of travel; name of the air carrier and flight number for each leg of the trip; and a statement explaining why the recipient meets one of the exceptions to the regulations. If the use of a foreign air carrier is pursuant to a bilateral agreement, the recipient must provide Treasury with a copy of the agreement or a citation to the official agreement available on the GSA website. Treasury shall make the final determination and notify the recipient in writing. Failure to adhere to the provisions of the Fly America Act will result in the recipient not being reimbursed for any transportation costs for which the recipient improperly used a foreign air carrier.

12. **Subawards**

- a. Recipients that enter into subawards under this award must execute a legally binding written agreement with the subrecipient which includes a budget by federal object class categories or fixed amount (2 C.F.R. § 200.332). This agreement must incorporate all the terms and conditions of this Award, including any applicable Special Award Conditions, and must include the information at 2 C.F.R. § 200.332(a). The recipient must perform all responsibilities required of a pass-through entity, as specified in 2 C.F.R. § 200.332, including but not limited to monitoring use of RESTORE Act funds and compliance with all terms and conditions; following up on any deficiencies identified as a result of onsite or desk

reviews and/or audits; and reviewing and correcting as necessary all subrecipient performance and financial reporting before including this information on the recipients' required RESTORE Act grant program's Performance Progress Reports (PPR) and Federal Financial Report (SF-425) reports.

- b. The recipient must evaluate and document each subrecipient's risk of noncompliance with federal statutes, regulations, and the terms and conditions of the subaward for purposes of determining the appropriate subrecipient monitoring strategy, as described in 2 C.F.R. § 200.332.
- c. The recipient must monitor the subrecipient's use of federal funds through reporting, site visits, regular contact, or other means to provide reasonable assurance that the subrecipient is administering the subaward in compliance with the RESTORE Act, Treasury's implementing regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any applicable Special Award Conditions, and to ensure that the scope of work is being appropriately carried out and milestones are achieved.
- d. The recipient must provide training and technical assistance to the subrecipient as necessary.
- e. The recipient must, if necessary, take appropriate enforcement actions against non-compliant subrecipients.
- f. If lower-tier subawards are authorized by Treasury, the recipient must ensure that a subrecipient who makes a subaward applies the terms and conditions of this Award, including any Special Award Conditions, to all lower-tier subawards through a legally binding written agreement, and that a subrecipient who makes a subaward carries out all the responsibilities of a pass-through entity described at 2 C.F.R. § 200.332.
- g. The recipient must verify that no subrecipient appears on the excluded party list on sam.gov. If lower-tier subawards are authorized by Treasury, the recipient must ensure that a subrecipient who makes a subaward verifies that this lower-tier subrecipient does not appear on the excluded parties list in sam.gov prior to issuing the subaward.
- h. The recipient must maintain written standards of conduct governing the performance of its employees involved in executing this Award and administration of subawards consistent with 2 C.F.R. § 200.318(c)(1).
 - i. No employee, officer, or agent shall participate in the selection, award, or administration of a subaward supported by federal funds if a real or apparent conflict of interest would be involved. Such a conflict would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization in which he/she serves as an officer or which employs or is about to employ any of the parties mentioned in this section, has a financial interest or other interest in the organization selected or to be selected for a subaward.
 - ii. The officers, employees, and agents of the recipient shall neither solicit nor accept anything of monetary value from subrecipients.
 - iii. A recipient may set standards for situations in which the financial interest is not substantial, or the gift is an unsolicited item of nominal value. A financial interest may include employment, stock ownership, a creditor or debtor relationship, or prospective employment with the organization selected or to be selected for a subaward.
 - iv. The standards of conduct must provide for disciplinary actions to be

applied for violations of such standards by officers, employees, or agents of the recipient.

E EFFECT OF A GOVERNMENT SHUTDOWN ON DISBURSEMENTS AND THE AVAILABILITY OF TREASURY PERSONNEL

In the event of a federal government shutdown, Treasury will issue guidance to the recipient concerning the expected effects on this Award.

F RECIPIENT REPORTING AND AUDIT REQUIREMENTS

1. Financial Reports

- a. The recipient must submit a "Federal Financial Report" (SF-425) on a semi-annual basis for the periods ending March 31 and September 30, or any portion thereof, unless otherwise specified in a Special Award Condition. Reports are due no later than 30 days following the end of each reporting period. A final SF-425 must be submitted within 120 days after the end of the period of performance.
- b. In the remarks section of each SF-425 submitted, the recipient must describe by federal budget class category the use of all funds received by the recipient and subrecipient (if applicable).
- c. The report must be signed by an authorized certifying official who is the employee authorized by the recipient organization to submit financial data on its behalf.
- d. The recipient must submit all financial reports via Grant Solutions (<http://www.GrantSolutions.gov>), unless otherwise specified by Treasury in writing.

2. Performance Reports

- a. The recipient must submit an SF-PPR ("Performance Progress Report"), a "RESTORE Act Status of Performance Report," (standard format provided by Treasury, OMB Approval No. 1505-0250) and an updated "RESTORE Act Milestones Report," (standard format provided by Treasury, OMB Approval No. 1505-0250) on a semi-annual basis for the periods ending March 31 and September 30, or any portion thereof, unless otherwise specified in a Special Award Condition. Reports are due no later than 30 days following the end of each reporting period, except the final report, which is due 120 days following the end of the period of performance.
- b. The recipient must submit all performance reports in (a) above, via <http://www.GrantSolutions.gov>, unless otherwise specified in writing by Treasury, and the recipient must complete these reports according to the following instructions:
 - i. SF-PPR: In the "performance narrative" attachment (section B of the SF-PPR), the recipient must provide the following information:
 - a) In Section B-1:
 - 1) Summarize activities undertaken during the reporting period by the recipient and any subrecipients (if applicable);
 - 2) Summarize any key accomplishments, including milestones completed for the reporting period;
 - 3) List any contracts awarded during the reporting period, along with the name of the contractor and its principal, the DUNS number of the contractor, the value of the contract,

the date of award, a brief description of the services to be provided, and whether or not local preference was used in the selection of the contractor; and

- 4) If the recipient or any subrecipient is authorized to make subawards, list any subawards executed during the reporting period, along with the name of the entity and its principal, the DUNS number of the entity, the value of the agreement, the date of award, and a brief description of the scope of work.

b) In Section B-2:

- 1) Indicate if any operational, legal, regulatory, budgetary, and/or ecological risks, and/or any public controversies, have materialized. If so, indicate what mitigation strategies have been undertaken to attenuate these risks or controversies; and
- 2) Summarize any challenges that have impeded the recipient's ability to accomplish the approved scope of work on schedule and on budget. If the scope of work is not on schedule, the recipient should propose a revised schedule and update its milestone report.

c) In Section B-3:

Summarize any significant findings or events, including any data compiled, collected, or created, if applicable.

d) In Section B-4:

Describe any activities to disseminate or publicize results of the activity, project, or program, including data and its repository and citations for publications resulting from this Award.

e) In Section B-5:

- 1) Describe all efforts taken to monitor contractor and/or subrecipient performance, including site visits, during the reporting period.
- 2) For subawards, indicate whether the subrecipient(s) submitted an audit to the recipient, and if so, whether the recipient issued a management decision on any findings;
- 3) For awards where Davis-Bacon Act provisions are applicable, indicate whether the recipient and/or subrecipient(s) received and reviewed certified weekly payroll records and/or whether the recipient or subrecipient(s) conducted labor interviews; and
- 4) Describe any other activities or relevant information not already provided.

f) In Section B-6:

Summarize the activities planned for the next reporting period.

- ii. "RESTORE Act Status of Performance Report": Instructions are provided on the report form.

- iii. "RESTORE Act Milestones Report": Instructions are provided on the report form.

3. **Interim Reporting on Significant Developments per 2 C.F.R. § 200.329(e)**

- a. Events may occur between the scheduled performance reporting dates that have significant impact upon the activity, project, or program. In such cases, the recipient must inform Treasury as soon as the following types of conditions become known:
 - i. Problems, delays, or adverse conditions which will materially impair the ability to meet the objective of this Award. This disclosure must include a statement of the action taken, or contemplated, and any assistance needed to resolve the situation; and
 - ii. Favorable developments, which enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.
- b. The recipient must:
 - i. Promptly provide to Treasury and the Treasury Inspector General a copy of all state or local inspector general reports, audit reports other than those prepared under the Single Audit Act or OMB's implementing regulation at 2 C.F.R. Part 200, Subpart F - Audit Requirements, and reports of any other oversight body, if such report pertains to an award under any RESTORE Act program, including the Comprehensive Plan Component and Spill Impact Component;
 - ii. Immediately notify Treasury and the Treasury Inspector General of any indication of fraud, waste, abuse, or potentially criminal activity pertaining to grant funds; and
 - iii. Promptly notify Treasury upon the selection of a contractor or subrecipient performing work under this Award and include the name and DUNS/UEI number for the subrecipient or contractor, and the total amount of the contract or subaward.

4. **Audit Requirements**

The recipient is responsible for complying, and ensuring all subrecipients comply, with all audit requirements of the Single Audit Act and 2 C.F.R. Part 200 Subpart F – Audit Requirements.

5. **Operational Self-Assessment**

The recipient must submit a revised *Operational Self-Assessment* form no later than June 30th of each calendar year for the duration of this Award. Only one *Operational Self-Assessment* must be submitted per recipient per year. In completing the form, the recipient must note controls or activities that have changed from its previous submission. The *Operational Self-Assessment* is electronically available and may be completed and submitted via a MAX.gov Federal Community link. The form is completed in MAX.gov and can be found on Treasury's Direct Component Resources webpage for reference at <https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/restore-act/direct-component/direct-component-resources>.

6. **Reporting Requirements under the Federal Funding Accountability and Transparency Act (FFATA) of 2006, Pub. L. No. 109-282, as amended by the Digital Accountability and Transparency Act (DATA Act) of 2014, Pub. L. No. 113-101**

The award term set forth in Appendix A to 2 C.F.R. Part 170 applies and is set forth in Appendix I to this document.

7. **System for Award Management (SAM.gov) and Universal Identifier Requirements**

The award term set forth in Appendix A to 2 C.F.R. Part 25 applies and is as set forth in Appendix II to this document.

8. **Reporting Requirements for Status of Real Property or Interest in Real Property**

The recipient must complete and submit to Treasury a report on the status of the real property or interest in real property in which the federal government retains an interest, using a *SF-429 Real Property Status Report* form annually for the first three years after real property acquisition or completion of construction, and thereafter every five years until the end of the Estimated Useful Life or time of disposition, whichever is less. See also Section Q.

9. **Reporting on Lobbying**

- a. Solely for the purposes of reporting on lobbying, “recipient” is used as defined at 31 C.F.R. § 21.105(0), as including all contractors, subcontractors at any tier, and subgrantees at any tier of the recipient of funds received in connection with a Federal contract, grant, loan, or cooperative agreement. The term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law. Solely for the purposes of reporting on lobbying, “award recipient” refers to the recipient of this RESTORE Act award from Treasury.
- b. All recipients must comply with the provisions of 31 U.S.C. § 1352, and Treasury’s implementing regulations at 31 C.F.R. Part 21. No appropriated funds may be expended by the recipient of a Federal grant to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant or the extension, continuation, renewal, amendment, or modification of any Federal grant.
- c. The award recipient must include a statement in all subawards, contracts and subcontracts exceeding \$100,000 in federal funds, that the subaward, contract, or subcontract is subject to 31 U.S.C. § 1352,
- d. Each “person” who requests or receives from Treasury a RESTORE Act grant shall file with Treasury a certification, set forth in Appendix A of 31 C.F.R. Part 21, that the person has not made, and will not make, any payment prohibited under 31 U.S.C. § 1352, as amended.
 - i. As defined in 31 U.S.C. § 1352(g)(3), the term “person”—includes an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit or not for profit; but does not include an Indian tribe, tribal organization, or any other Indian organization eligible to receive Federal contracts, grants, cooperative agreements, or loans from an agency but only with respect to expenditures by such tribe or organization that are made for purposes specified in subsection (a) and are permitted by other Federal law.
 - ii. The certification shall be filed pursuant to 31 C.F.R. § 21.110.

- iii. Any subrecipient, at any tier, who receives a subaward exceeding \$100,000 under this award, shall file with the tier above them a certification, set forth in appendix A of 31 C.F.R. Part 21, that the subrecipient as not made, and will not make, any payment prohibited by 31 C.F.R. § 21.100(a). Pursuant to 31 C.F.R. 21.110(d), the certification shall be filed to the next tier above.
- iv. Any contractor or subcontractor, at any tier, who receives a contract or subcontract exceeding \$100,000 under this award, shall file with the tier above them a certification, set forth in Appendix A of 31 C.F.R. Part 21, that the contractor or subcontractor has not made, and will not make, any payment prohibited by 31 U.S.C. § 1352, as amended. Pursuant to 31 C.F.R. 21.110(d), the certification shall be filed to the next tier above.
- v. Every certification filed shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared with any tier to which the erroneous representation if forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification. If a person fails to file a required certification, the United States may pursue all available remedies, including those authorized by 31 U.S.C. § 1352.
- vi. Pursuant to 31 C.F.R. § 21.110(c), every recipient must file a new disclosure form at the end of each calendar quarter in which a payment, or an agreement to make a payment, is made which would have otherwise required reporting at the time of application. Moreover, if an event occurs during the calendar quarter which materially affects the accuracy of information reported on the disclosure form previously submitted, the submitter must file a new disclosure form. Events which “materially affect” the accuracy of information already reported include:
 - a) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action;
 - b) A change in the persons(s) influencing or attempting to influence; and/or
 - c) A change in the Federal official(s) contacted to influence or attempt to influence a covered Federal action,
- vii. The award recipient must submit its form SF-LLLs, as well as those received from subrecipients, contractors and subcontractors, to Treasury within 30 calendar days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed.
- viii. The award recipient must require subrecipients, contractors and subcontractors to submit form SF-LLL to the award recipient within 15 calendar days following the end of the calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure from previously filed.

G FINANCIAL MANAGEMENT SYSTEM AND INTERNAL CONTROL REQUIREMENTS

1. Pursuant to 2 C.F.R. § 200.302, Recipients that are states must expend and account for Award funds in accordance with the applicable state laws and procedures for expending and accounting for the state's own funds. All other recipients must expend and account for Award funds in accordance with federal laws and procedures. In addition, all recipients' financial management systems must be sufficient to:
 - a. Permit the preparation of accurate, current, and complete SF-425, SF-PPR, RESTORE Act Milestones Report, and RESTORE Act Status of Performance Reports, as well as reporting on subawards, if applicable, and any additional reports required by any Special Award Conditions;
 - b. Permit the tracing of funds to a level of expenditures adequate to establish that such funds have been used in accordance with all applicable federal, state, and local requirements, including the RESTORE Act, Treasury implementing regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions, and retain all supporting documentation to allow this tracing of funds;
 - c. Allow for the comparison of actual expenditures with the amount budgeted for each Award made to the recipient by Treasury under the RESTORE Act grant programs;
 - d. Identify and track all RESTORE Act awards received and expended by the assigned grant number, which is the Universal Award ID (as provided by Treasury), the year the Award was made, the awarding agency (Treasury), and the program's CFDA title and CFDA number (21.015);
 - e. Record the source and application of funds for all activities funded by this Award, as well as all awards, authorizations, obligations, unobligated balances, assets, expenditures, program income, and interest earned on federal advances, and allow users to tie these records to source documentation such as cancelled checks, paid bills, payroll and attendance records, contract and subaward agreements, etc.; and
 - f. Ensure effective control over, and accountability for, all federal funds, and all property and assets acquired with federal funds. The recipient must adequately safeguard all assets and ensure that they are used solely for authorized purposes.
2. The recipient must establish written procedures to implement the requirements set forth in section H below (Award Disbursement), as well as written procedures to determine the allowability of costs in accordance with 2 C.F.R. Part 200, subpart E (*Cost Principles*) and the terms and conditions of this Award.
3. The recipient must establish and maintain effective internal controls over this Award in a manner that provides reasonable assurance that the recipient is managing this Award in compliance with the RESTORE Act, Treasury's implementing regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions. These internal controls should be in compliance with guidance in "Standards for Internal Control in the Federal Government" issued by the Comptroller General of the United States or the "Internal Control Integrated Framework", issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The recipient must evaluate and monitor its compliance, and the compliance of any subrecipients, with the RESTORE Act, Treasury's implementing regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and any Special Award Conditions, and promptly remedy any identified instances of noncompliance. When and if an instance of noncompliance cannot be remedied by the recipient, the recipient must promptly report

the instance of noncompliance to Treasury and Treasury's Inspector General, followed by submitting a proposed mitigation plan to Treasury.

4. The recipient must take reasonable measures to safeguard protected personally identifiable information (PII), as defined in 2 C.F.R. 200.1, consistent with applicable federal, state, and local laws regarding privacy and obligations of confidentiality.

H RECORDS RETENTION REQUIREMENTS

1. The recipient must retain all records pertinent to this Award for a period of three years from the date of submission of the final expenditure report (final SF-425), as described in 2 C.F.R. § 200.334. While electronic storage of records (backed up as appropriate) is preferable, the recipient has the option to store records in hardcopy (paper) format. For the purposes of this section, the term "records" includes but is not limited to:
 - a. Copies of all contracts and all documents related to a contract, including the Request for Proposal (RFP), all proposals/bids received, all meeting minutes or other documentation of the evaluation and selection of contractors, any disclosed conflicts of interest regarding a contract, all signed conflict of interest forms, all conflict of interest and other procurement rules governing a particular contract, and any bid protests;
 - b. Copies of all subawards and all documents related to a subaward. For competitively selected subawards, documents may include those relevant to and required by the recipient's or subrecipient's selection process such as the funding opportunity announcement or equivalent, all applications received, all meeting minutes or other documentation of the evaluation and selection of subrecipients, any disclosed conflicts of interest regarding a subaward, and all signed conflict of interest forms;
 - c. All documentation of site visits, reports, audits, and other monitoring of contractors (vendors) and subrecipients;
 - d. All financial and accounting records, including records of disbursements to contractors (vendors) and subrecipients, and documentation of the allowability of costs charged to this Award;
 - e. All supporting documentation for the performance outcome and other information reported on the recipient's SF-425s, SF-PPRs, RESTORE Act Milestones Reports, and RESTORE Act Status of Performance Reports; and
 - f. Any reports, publications, and data sets from any research conducted under this Award.
2. If any litigation, claim, investigation, or audit relating to this Award or an activity funded with Award funds is started before the expiration of the three-year period following submission of the final expenditure report, the records must be retained until all litigation, claims, investigations, or audit findings involving the records have been resolved and final action taken.
3. If the recipient is authorized to enter into contracts to complete the approved scope of work, the recipient must include in its legal agreement with the contractor a requirement that the contractor retain all records in compliance with 2 C.F.R. § 200.334.
4. If the recipient is authorized to make subawards, the recipient must include in its legal agreement with the subrecipient a requirement that the subrecipient retain all records in compliance with 2 C.F.R. § 200.334.

I THE FEDERAL GOVERNMENT'S RIGHT TO INSPECT, AUDIT, AND INVESTIGATE

1. Access to Records

- a. Treasury, the Treasury Office of Inspector General, the Government Accountability Office, or any of their authorized representatives have the right of timely and unrestricted access to any documents, papers or other records, including electronic records, of the recipient that are pertinent to this Award, in order to make audits, investigations, examinations, excerpts, transcripts, and copies of such documents, in accordance with 2 C.F.R. § 200.337. This right also includes timely and reasonable access to the recipient's personnel for the purpose of interview and discussion related to such documents. This right of access shall continue as long as records are required to be retained.
- b. If the recipient is authorized to make subawards, the recipient must include in its legal agreement or contract with the subrecipient a requirement that the subrecipient make available to Treasury, the Treasury Office of Inspector General, the Government Accountability Office, or any of their authorized representatives any documents, papers or other records, including electronic records, of the subrecipient, that are pertinent to this Award, in order to make audits, investigations, examinations, excerpts, transcripts, and copies of such documents. This right also includes timely and reasonable access to the subrecipient's personnel for the purpose of interview and discussion related to such documents. This right of access shall continue as long as records are required to be retained (see Section F above).
- c. If the recipient is authorized to enter into contracts to complete the approved scope of work, the recipient must include in its contract a requirement that the contractor make available to Treasury, the Treasury Office of Inspector General, the Government Accountability Office, or any of their authorized representatives any documents, papers or other records, including electronic records, of the contractor that are pertinent to this Award, in order to make audits, investigations, examinations, excerpts, transcripts, and copies of such documents. This right also includes timely and reasonable access to the contractor's personnel for the purpose of interview and discussion related to such documents. This right of access shall continue as long as records are retained (see Section H above).

2. Access to the Recipient's Sites

- a. The Treasury, the Treasury Office of Inspector General, and Government Accountability Office shall have the right during normal business hours to conduct announced and unannounced onsite and offsite physical visits of recipients and their subrecipients and contractors corresponding to the duration of their records retention obligation for this Award.

J AWARD DISBURSEMENT

1. Unless otherwise specified in a Special Award Condition, Treasury will make advance payments under this Award upon request. However, if one of the following occurs, Treasury will require Award funds to be disbursed on a reimbursement basis either with or without pre-approval of drawdown requests: (1) Treasury determines that the recipient does not meet the financial management system standards (see Section E) included in these Standard Terms and Conditions, (2) Treasury determines that the recipient has not established procedures that will minimize the time elapsing between the transfer of funds and disbursement, or (3) Treasury determines that the recipient is in noncompliance with the RESTORE Act, Treasury's implementing regulations, other pertinent federal statutes, these Standard Terms and Conditions, Program-Specific Terms and Conditions, and/or any Special Award Conditions, and determines that the

appropriate remedy is to require payment on a reimbursement basis.

2. If reimbursement is used, Treasury may require pre-approval of drawdown requests. If Treasury requires pre-approval of drawdown requests, Treasury will provide the recipient with instructions on what billing to submit. Treasury will make payment within 30 calendar days after receipt of the billing, unless Treasury determines the request to be improper, in which case payment will not be made.
3. To the extent available, the recipient must disburse funds available from program income, rebates, refunds, contract settlements, audit recoveries, and interest earned on such funds before requesting additional cash payments of Award funds.
4. Treasury will use the Department of Treasury's Automated Standard Application for Payment (ASAP) system to disburse payments of Award funds. In order to receive payments, the recipient must first enroll in ASAP.gov. Treasury creates and funds account(s) for recipients in ASAP.gov, and recipients access their account(s) online to request funds. All Award funds will be disbursed electronically using the Automated Clearing House (ACH) for next day or future-day payments only. Awards paid through ASAP.gov may contain controls or withdrawal limits set by Treasury.
5. Requirements applicable to recipients that are states: Payment methods of state agencies or instrumentalities must be consistent with Treasury-State agreements under the Cash Management Improvement Act, 31 C.F.R. Part 205 "Rules and Procedures for Efficient Federal-State Funds Transfers," and Treasury Financial Manual (TFM) 4A-2000 Overall Disbursing Rules for All Federal Agencies.
6. Requirements applicable to recipients that are not states: The recipient must minimize the time between the transfer of funds from Treasury and the use of the funds by the recipient. Advance payments to the recipient must be limited to the minimum amounts needed and be timed to be in accordance with the actual, immediate cash requirements of the recipient in carrying out the purpose of the approved activity, project, or program. The timing and amount of advance payments must be as close as is administratively feasible to the actual disbursements by the parish or county for activity, project, or program costs and the proportionate share of any allowable indirect costs. Advances should not be drawn down more than three business days before expenditure. Advanced funds not disbursed in a timely manner must be promptly returned to Treasury. The recipient must make timely payment to contractors (vendors) in accordance with the contract provisions.
7. Advances of federal funds must be deposited and maintained in United States Government-insured interest-bearing accounts whenever possible. The recipient is not required to maintain a separate depository account for receiving Award funds. If the recipient maintains a single depository account where advances are commingled with funds from other sources, the recipient must maintain on its books a separate subaccount for the Award funds. Consistent with the national goal of expanding opportunities for women-owned and minority-owned business enterprises, the recipient is encouraged to ensure fair consideration of women-owned and minority-owned banks (a bank which is owned at least 50 percent by women or minority group members).
8. The recipient must maintain advances of federal funds in interest-bearing accounts, unless one of the following conditions applies:
 - a. The recipient receives less than \$250,000 in federal awards per year;
 - b. The best reasonably available interest-bearing account would not be expected to earn interest in excess of \$500 per year on federal cash balances; or
 - c. The depository would require an average or minimum balance so high that it would not be feasible within the expected federal and non-federal cash resources.

9. Interest earned amounts up to \$500 per year may be retained by the non-federal entity for administrative expense. Any additional interest earned on federal advance payments deposited in interest-bearing accounts must be remitted annually to the Department of Health and Human Services, Payment Management System, (PMS) through an electronic medium using either Automated Clearing House (ACH) network or a Fedwire Funds Service payment.

K NOTIFICATIONS AND PRIOR APPROVALS

1. Notifications

- a. In addition to other notifications required under these Standard Terms and Conditions, the recipient must promptly notify Treasury in writing whenever a vacancy or change to key personnel listed in the award application occurs or is anticipated.
- b. Except for changes described in (2) below, the recipient may revise the budget without prior approval. If the recipient alters the budget, the recipient must provide a revised budget form (SF-424A or SF-424C, as applicable) to Treasury as an attachment to the SF-PPR, reflecting all budget revisions from the same period covered by the SF-PPR. Acceptance of such budget information does not constitute Treasury's approval of the revised budget.

2. Prior Approvals

- a. The recipient must obtain prior written approval from Treasury whenever any of the following actions is anticipated:
 - i. A change in the scope or the objective of the project or program (even if there is no associated budget revision requiring prior written approval);
 - ii. A need to extend the period of performance;
 - iii. A need for additional federal funds to complete the activity, project, or program;
 - iv. The transfer of funds among direct cost categories if this Award exceeds the Simplified Acquisition Threshold (defined at 2 C.F.R. § 200.1) and the cumulative amount of such transfers exceeds or is expected to exceed 10 percent of the total budget as last approved by Treasury;
 - v. Any transfer between the non-construction and construction budget lines;
 - vi. The use of funds to reimburse the recipient for pre-award costs;
 - vii. The inclusion of costs that require prior approval in accordance with 2 C.F.R. Part 200, Subpart E—Cost Principles, unless described in the application and approved in this Award, including but not limited to costs related to foreign travel and research on human subjects (which includes surveys and focus groups);
 - viii. The subawarding, transferring or contracting out of any work under this Award (this provision does not apply to the acquisition of supplies, material, equipment or general support services), unless described in the application and approved in this Award;
 - ix. Termination of a subaward prior to the expiration of the agreement with the subrecipient;
 - x. The commencement of any construction under the award;

- xi. The purchase of equipment under the award;
- xii. The use of real property in which there is a recorded federal interest for purposes other than purposes of award; and
- xiii. The disposition of real property or equipment with a fair market value exceeding \$5,000.

L AMENDMENTS AND CLOSEOUT

1. Amendments

- a. The terms of this Award may be amended with the written approval of the recipient and Treasury.
- b. Treasury reserves the right to unilaterally amend the terms of this Award if required by federal law or regulation.
- c. An amendment is required whenever Treasury and the recipient wish to:
 - i. Make a material change to the award scope of work;
 - ii. Extend the award period of performance;
 - iii. Increase or decrease the amount of funds on a RESTORE Act grant;
 - iv. Unless described in the application and funded in the approved federal awards, the subawarding, transferring or contracting out of any work under a federal award, to include the selection of a Center or Centers of Excellence not specified in the approved scope of work, or the termination of a subaward included in the approved scope of work prior to the expiration of the agreement with the subrecipient. This provision does not apply to the acquisition of supplies, material, equipment or general support services;
 - v. Change the approved cost-sharing or matching provided by the recipient; or
 - vi. Transfer funds between the construction and nonconstruction budget line items.
- d. Requests for amendments must be submitted via GrantSolutions.gov, unless Treasury specifically waives this requirement, and must be signed by the recipient's Authorized Official;
- e. Request for amendments must contain the following information, unless otherwise indicated by Treasury:
 - i. A revised change in scope, whenever a material change in scope is requested or whenever the recipient intends to subaward, transfer or contract out of any work under a federal award, include the selection of a Center or Centers of Excellence not specified in the approved scope of work, or termination of a subaward included in the approved scope of work prior to the expiration of the agreement with the subrecipient. This scope of work should be in redline format to clearly identify the changes from the original scope of work and must include revised performance measures and a justification for the proposed revision to the scope of work;
 - ii. A revised detailed budget, whenever the recipient intends to make changes to the original approved budget to reflect a request for increased or decreased federal funding, a change in matching funds, or

transfers between line items. This detailed budget should show the original budget for each line item, the requested change for each line item, and an explanation or justification for each requested line item change;

- iii. A revised period of performance and revised milestone chart, whenever a time extension is requested, as well as a justification for the time extension request, an explanation of how the recipient will accomplish the scope of work in the revised timeframe, and a discussion of risks that could further impact the schedule, and a risk mitigation strategy to reduce the likelihood of these schedule risks or their impact if they do occur; and
- iv. Any other supporting documentation as appropriate and as requested by Treasury.

2. **Closeout**

- a. Treasury will closeout this Award when it determines that all applicable administrative actions and all required work of this Award have been completed.
- b. Within 120 calendar days after the end of the period of performance, unless the recipient requests, and Treasury approves, an extension, the recipient must submit any outstanding SF-PPR and RESTORE Act Status of Performance reports, as well as the required reporting on subawards, if applicable, plus a final SF-425 report. In the remarks section of the final SF-425 report, the recipient must describe by federal budget class category the final use of all funds received by the recipient and subrecipient (if applicable). The subrecipient must submit to the recipient, no later than 90 calendar days (or an earlier date as agreed upon by the pass-through entity and subrecipient) after the end date of the period of performance, all financial, performance, and other reports as required by the terms and conditions of the federal award. The recipient may approve an extension when requested and justified by the subrecipient.
- c. The recipient must liquidate all obligations incurred under this Award not later than 120 calendar days after the end of the period of performance, or at closeout of the Award by Treasury.
- d. The recipient must promptly refund any balances of unobligated cash that Treasury paid. If the recipient is required to refund any balances, the recipient should contact Treasury for instructions.
- e. Following receipt of reports in paragraph (a) of this section, Treasury will make upward or downward adjustments to the allowable costs, and then make prompt payment to the recipient for allowable, unreimbursed costs.
- f. The recipient must account for any real and personal property acquired with Federal funds or received from the Federal Government in accordance with 2 C.F.R. §§ 200.310 through 200.316 and § 200.330 and Section Q of these terms and conditions
- g. If the recipient does not submit all reports in accordance with 2 C.F.R. § 200.344, and the terms and conditions of this Award within one year of the period of performance end date, Treasury will proceed to close out the Award without the missing reports. Treasury will also report the recipient's material failure to comply with the terms and conditions of this Award with the OMB-designated integrity and performance system (currently FAPIIS) and may pursue other remedies for noncompliance, as listed in Section M.
- h. The closeout of this Award does not affect any of the following:

- i. The right of Treasury or pass-through entity to disallow costs and recover funds on the basis of a later audit or other review. Treasury or pass-through entity must make any cost disallowance determination and notify the non-Federal entity within the record retention period.
 - ii. The requirement for the recipient to return any funds due as a result of later refunds, corrections, or other transactions including final indirect cost rate adjustments.
 - iii. The ability of the Federal awarding agency to make financial adjustments to a previously closed award such as resolving indirect cost payments and making final payments.
 - iv. Audit requirements in 2 C.F.R. Part 200, Subpart F.
 - v. Property management and disposition requirements in 2 C.F. R. §§ 200.310 through 200.316.
 - vi. Records retention as required in 2 C.F.R. §§ 200.334 through 200.337.
- i. After closeout of the Federal award, a relationship created under the Federal award may be modified or ended in whole or in part with the consent of the Federal awarding agency or pass-through entity and the non-Federal entity, provided the responsibilities of the non-Federal entity referred to in 2 C.F.R. § 200.344(a), including those for property management as applicable, are considered and provisions made for continuing responsibilities of the non-Federal entity, as appropriate.

M TERMINATION AND REMEDIES FOR NONCOMPLIANCE

1. If Treasury determines that the recipient has failed to comply with the RESTORE Act, Treasury's implementing regulations, these Standard Terms and Conditions, Program-Specific Terms and Conditions, or any Special Award Conditions, Treasury may take any of the following actions (in addition to the remedies in Section A.3, above, applicable to Direct Component awards):
 - a. Impose additional Special Award Conditions such as:
 - i. Allowing payment only on a reimbursement basis, with pre-approval of drawdown requests;
 - ii. Requiring additional reporting or more frequent submission of the SF-425, SF-PPR, or RESTORE Act Status of Performance Report;
 - iii. Requiring additional activity, project, or program monitoring;
 - iv. Requiring the recipient or one or more of its subrecipients to obtain technical or management assistance; and/or
 - v. Establishing additional actions that require prior approval;
 - b. Temporarily withhold payments pending correction of the noncompliance;
 - c. Disallow from this Award all or part of the cost of the activity or action not in compliance;
 - d. Wholly or partly suspend or terminate this Award;
 - e. Withhold additional Awards;
 - f. Initiate suspension or debarment proceedings as authorized under 2 C.F.R. Part 180 and Treasury's implementing regulations at 31 C.F.R. Part 19; and/or
 - g. Take any other remedies that may be legally available.

2. Treasury will notify the recipient in writing of Treasury's proposed determination that an instance of noncompliance has occurred, provide details regarding the instance of noncompliance, and indicate the remedy that Treasury proposes to pursue. The recipient will have 30 calendar days to respond and provide information and documentation contesting Treasury's proposed determination or suggesting an alternative remedy.
3. Treasury will consider any and all information provided by the recipient and issue a final determination in writing, which will state Treasury's final findings regarding noncompliance and the remedy to be imposed.
4. In extraordinary circumstances, Treasury may require that any of the remedies above take effect immediately upon notice in writing to the recipient. In such cases, the recipient may contest Treasury's determination or suggest an alternative remedy in writing to Treasury, and Treasury will issue a final determination.
5. Instead of, or in addition to, the remedies listed above, Treasury may refer the noncompliance to the Treasury Office of Inspector General for investigation or audit. Treasury will refer all allegations of fraud, waste, or abuse to the Treasury Inspector General.
6. Treasury may terminate this Award in accordance with 2 C.F.R. § 200.340. Requests for termination by the recipient must also be in accordance with 2 C.F.R. § 200.340. Such requests must be in writing and must include the reasons for such termination, the effective date, and in the case of partial termination, the portion to be terminated. If Treasury determines that the remaining portion of this Award will not accomplish the purpose of this Award, Treasury may terminate this Award in its entirety.
7. If this Award is terminated, Treasury will update or notify any relevant government-wide systems or entities of any indications of poor performance as required by 41 U.S.C. § 417b and 31 U.S.C. § 3321, as implemented at 2 C.F.R. Part 180, and Treasury's implementing regulation at 31 C.F.R. Part 19.
8. Costs that result from obligations incurred by the recipient during a suspension or after termination are not allowable unless Treasury expressly authorizes them in the notice of suspension or termination or subsequently. However, costs during suspension or after termination are allowable if: (1) the costs result from obligations which were properly incurred by the recipient before the effective date of suspension or termination and are not in anticipation of it; and (2) the costs would be allowable if the Award was not suspended or expired normally at the end of the period of performance in which the termination takes effect.
9. Notwithstanding the foregoing, consistent with 2 C.F.R. 200.340, Treasury may also **unilaterally terminate this award in whole or in part** if the award no longer effectuates the program goals or agency priorities.

N DEBTS

1. **Payment of Debts Owed the Federal Government**
 - a. Any funds paid to the recipient in excess of the amount to which the recipient is finally determined to be authorized to retain under the terms of this Award constitute a debt to the federal government.
 - b. Any debts determined to be owed the federal government must be paid promptly by the recipient. A debt is delinquent if it has not been paid by the date specified in Treasury's initial written demand for payment, unless other satisfactory arrangements have been made. Interest, penalties, and administrative charges (see paragraphs c, d, and e below) shall be charged on delinquent debts in accordance with 31 U.S.C. § 3717 and 31 C.F.R. § 901.9. Treasury will refer any

debt that is more than 120 days delinquent to Treasury's Bureau of the Fiscal Service for debt collection services.

- c. The minimum annual interest rate to be assessed on any debts is the Department of the Treasury's Current Value of Funds Rate (CVFR). The CVFR is available online at https://www.fiscal.treasury.gov/fsreports/rpt/cvfr/cvfr_home.htm. The assessed rate shall remain fixed for the duration of the indebtedness, based on the beginning date in Treasury's written demand for payment.
- d. Penalties on any debts shall accrue at a rate of not more than 6 percent per year or such other higher rate as authorized by law.
- e. Administrative charges, that is, the costs of processing and handling a delinquent debt, shall be determined by Treasury.
- f. Funds for payment of a debt must not come from other federally sponsored programs. Verification that other federal funds have not been used will be made, e.g., during on-site visits and audits.

2. **Effect of Judgment Lien on Eligibility for Federal Grants, Loans, or Programs**

Pursuant to 28 U.S.C. § 3201(e), unless waived in writing by Treasury, a debtor who has a judgment lien against the debtor's property for a debt to the United States shall not be eligible to receive any grant or loan that is made, insured, guaranteed, or financed directly or indirectly by the United States or to receive funds directly from the federal government in any program, except funds to which the debtor is entitled as beneficiary, until the judgment is paid in full or otherwise satisfied.

O NON-DISCRIMINATION REQUIREMENTS

No person in the United States shall, on the ground of race, color, national origin, handicap, age, religion, or sex, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving federal financial assistance. The recipient is required to comply with all non-discrimination requirements summarized in this section, and to ensure that all subawards and contracts contain these nondiscrimination requirements.

1. **Statutory Provisions**

- a. Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) prohibits discrimination on the grounds of race, color, or national origin under programs or activities receiving federal financial assistance;
- b. Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.) prohibits discrimination on the basis of sex under federally assisted education programs or activities;
- c. Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794) prohibits discrimination on the basis of handicap under any program or activity receiving or benefitting from federal assistance;
- d. The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), prohibits discrimination on the basis of age in programs or activities receiving federal financial assistance;
- e. Title II of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.) ("ADA"), including the ADA Amendments Act of 2008 (Public Law 110-325), ("ADAAA"), prohibits discrimination on the basis of disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereto, as well as public or private

- entities that provide public transportation; and
- f. Any other applicable non-discrimination law(s).

2. **Regulatory Provisions**

- a. Treasury's Title VI regulations, 31 C.F.R. Part 22, implement Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. §§ 2000d, et seq.) which prohibits discrimination on the grounds of race, color, or national origin under programs or activities receiving federal financial assistance;
- b. Treasury's Title IX regulations, 31 C.F.R. Part 28, implement Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681 et seq.) which prohibits discrimination on the basis of sex under federally-assisted education programs or activities;
- c. Treasury's Age Discrimination regulations, 31 C.F.R. Part 23, implement the Age Discrimination Act of 1975, which prohibits discrimination on the basis of age in programs and activities receiving federal financial assistance.

3. **Other Provisions**

- a. Parts II and III of EO 11246 (30 Fed. Reg. 12319, 1965), "Equal Employment Opportunity," as amended by EO 11375 (32 Fed. Reg. 14303, 1967) and 12086 (43 Fed. Reg. 46501, 1978), require federally assisted construction contracts to include the nondiscrimination provisions of §§ 202 and 203 of EO 11246 and Department of Labor regulations implementing EO 11246 (41 C.F.R. § 60-1.4(b), 1991).
- b. EO 13166 (August 11, 2000), "Improving Access to Services for Persons With Limited English Proficiency," requires federal agencies to examine the services provided, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them.

4. **Title VII Exemption for Religious Organizations**

Generally, Title VII of the Civil Rights Act of 1964, 42 U.S.C. §§ 2000e et seq., provides that it shall be an unlawful employment practice for an employer to discharge any individual or otherwise to discriminate against an individual with respect to compensation, terms, conditions, or privileges of employment because of such individual's race, color, religion, sex, or national origin. However, Title VII, 42 U.S.C. § 2000e-1(a), expressly exempts from the prohibition against discrimination on the basis of religion, a religious corporation, association, educational institution, or society with respect to the employment of individuals of a particular religion to perform work connected with the carrying on by such corporation, association, educational institution, or society of its activities.

5. **Protections for Whistleblowers**

In accordance with 41 U.S.C. § 4712, neither the recipient nor any of its subrecipients, contractors (vendors), or subcontractors may discharge, demote, or otherwise discriminate against an employee as a reprisal for disclosing information to a person or entity listed below that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, an abuse of authority relating to a federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal contract (including the competition for or negotiation of a contract) or grant.

The list of persons and entities referenced in the paragraph above includes the following:

- a. A Member of Congress or a representative of a committee of Congress;
- b. An Inspector General;
- c. The Government Accountability Office;
- d. A Treasury employee responsible for contract or grant oversight or management;
- e. An authorized official of the Department of Justice or other law enforcement agency;
- f. A court or grand jury; and/or
- g. A management official or other employee of the recipient, subrecipient, vendor, contractor (vendor), or subcontractor who has the responsibility to investigate, discover, or address misconduct.

Recipients, subrecipients, and contractors shall inform its employees in writing of the rights and remedies provided under this section, in the predominant native language of the workforce.

P REQUIREMENT TO CHECK DEBARMENT AND SUSPENSION STATUS OF SUBRECIPIENTS, CONTRACTORS, SUBCONTRACTORS, AND VENDORS

1. Recipients that are authorized to enter into subawards or contracts to accomplish all or a portion of the approved scope of work must verify that a proposed subrecipient or contractor (if the contract is expected to equal or exceed \$25,000) or its principals, does not appear on the federal government's Excluded Parties List prior to executing an agreement or contract with that entity. Recipients may not enter into a subaward or contract with an entity that appears on the Excluded Parties List. The Excluded Parties List is accessible at <http://www.sam.gov>.
2. The recipient must ensure that any agreements or contracts with subrecipients or contractors (vendors) require that they verify that their contractors (for contracts expected to equal or exceed \$25,000), subcontractors (for subcontracts expected to equal or exceed \$25,000), or principals that the subrecipients or contractors engage to accomplish the scope of work, if applicable, do not appear on the federal government's Excluded Parties List. Subrecipients and contractors may not enter into a contract or subcontract with an entity, or that entity's principals, if that entity or its principals appear on the Excluded Parties List.
3. The recipient must include a term or condition in all lower-tier covered transactions (subawards, contracts, and subcontracts described in 31 C.F.R. Part 19, subpart B) that the award is subject to 31 C.F.R. Part 19.

Q PROCUREMENT

1. **General Provisions**
 - a. When procuring property and services under a Federal award, a State must follow the same policies and procedures it uses for procurements from its non-Federal funds. The State will comply with 2 C.F.R. § 200.321, 200.322, and 200.323 and ensure that every purchase order or other contract includes any clauses required by 2 C.F.R. § 200.327.
 - b. All other non-Federal entities, including subrecipients of a State, must follow the procurement standards in 2 C.F.R. § 200.318 through 200.327.

2. **Solid Waste Disposal**

The recipient must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired by the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

3. **Subawards**

- a. When the recipient makes a subaward to a subrecipient that is authorized to enter into contracts for the purpose of completing the subaward scope of work, the recipient must require the subrecipient to comply with the requirements contained in this section.
- b. The recipient, subrecipient, contractor, and/or subcontractor must not sub-grant or sub-contract any part of the approved project to any agency or employee of Treasury and/or other federal department, agency, or instrumentality without the prior written approval of Treasury. Treasury will notify the recipient in writing of the final determination.

4. **Minority and Women-Owned Business Enterprises**

Pursuant to 2 C.F.R. § 200.321, recipients and subrecipients must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Affirmative steps must include:

- a. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- b. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
- c. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
- d. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
- e. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and
- f. Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in (a) through (e) of this paragraph.

5. **Domestic Preference for Procurement**

Recipients are encouraged, to the greatest extent practicable, to provide a preference for the purchase, acquisition, or use of goods, products, or material produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).

See 2 C.F.R. § 200.322 for definitions of “manufactured products” and “produced in the United States.” This requirement must be included in all subawards including all contracts and purchase orders for work or products under this award pursuant to 2 C.F.R. § 200.322 and Executive Order 14005 Ensuring the Future is Made in All of America by All of America’s Worker (January 25, 2021).

R ENVIRONMENTAL REQUIREMENTS

The recipient must comply with all environmental standards, and provide information requested by Treasury relating to compliance with environmental standards, including but not limited to the following federal statutes, regulations, and EOs. If the recipient is permitted to make any subawards, the recipient must include the environmental statutes, regulations, and executive orders listed below in any agreement or contract with a subrecipient, and require the subrecipient to comply with all of these and to notify the recipient if the subrecipient becomes aware of any impact on the environment that was not noted in the recipient’s approved application package:

1. National Historic Preservation Act, as amended (54 U.S.C. § 300101 et seq.) and Archeological and Historic Preservation Act, as amended (54 U.S.C. § 312501 et seq.)
2. The National Environmental Policy Act of 1969, as amended (42 U.S.C. § 4321 et seq.)
3. Clean Air Act, as amended (42 U.S.C. § 7401 et seq.), Clean Water Act, as amended (33 U.S.C. § 1251 et seq.), and EO 11738
4. The Flood Disaster Protection Act of 1973, as amended (42 U.S.C. § 4002 et seq.)
5. The Endangered Species Act of 1973, as amended, (16 U.S.C. § 1531 et seq.)
6. The Coastal Zone Management Act, as amended, (16 U.S.C. § 1451 et seq.)
7. The Coastal Barriers Resources Act, as amended, (16 U.S.C. § 3501 et seq.)
8. The Wild and Scenic Rivers Act, as amended, (16 U.S.C. § 1271 et seq.)
9. The Safe Drinking Water Act of 1974, as amended, (42 U.S.C. § 300f-j)
10. The Resource Conservation and Recovery Act of 1976, as amended, (42 U.S.C. § 6901 et seq.)
11. The Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) (42 U.S.C. § 9601 et seq.) and the Community Environmental Response Facilitation Act (42 U.S.C. § 9601 note)
12. Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 U.S.C. §1801)
13. Marine Mammal Protection Act, as amended (16 U.S.C § 31)
14. Migratory Bird Treaty Act, as amended (16 U.S.C. §§ 703-712)
15. Responsibilities of Federal Agencies to Protect Migratory Birds, EO 13186
16. Bald and Golden Eagle Protection Act, as amended (16 U.S.C. § 668-668d)
17. Marine Protection, Research and Sanctuaries Act (33 U.S.C. §§ 1401-1445 and 16 U.S.C. § 1431—1445)
18. National Marine Sanctuaries Act, as amended (16 U.S.C. § 1431 et seq.)
19. Rivers and Harbors Act of 1899 (33 U.S.C § 407)
20. Environmental Justice in Minority Populations and Low-Income Populations, EO 12898, as amended
21. Flood Management, EO 11988, as amended by EO 13690, which was revoked by EO

13807 on August 15, 2017 and reinstated by EO 14030 on May 20, 2021, reestablishing the Federal Flood Risk Management Standard (FFRMS)

22. Protection of Wetland, EO11990, May 24, 177, as amended by EO 12608
23. Farmland Protection Policy Act, as amended (7 U.S.C. § 4201 et. seq.)
24. Coral Reef Protection, EO 13089
25. Invasive Species, EO 13112

S REAL PROPERTY, CONSTRUCTION, EQUIPMENT AND SUPPLIES

1. General Requirements

- a. The recipient must comply with the property standards at 2 C.F.R. § 200.310 through 200.316 for real property, equipment, supplies, and intangible property.

2. Real Property and Acquisition of Land and Land Interests

- a. No real property or interest in real property may be acquired under this Award unless authorized in the approved scope of work.
- b. In accordance with 31 C.F.R. § 34.803(f), no land or interests in land, such as easements, or right of ways, may be acquired under this Award unless the recipient can provide documentation satisfactory to Treasury that the land or interest in land was acquired by purchase, exchange, or donation from a willing seller.

3. Compliance with State, Local and Federal Requirements

The project must comply with all applicable federal laws and regulations, and with all requirements for state, and local laws and ordinances to the extent that such requirements do not conflict with federal laws. The recipient is also responsible for supervising the design, bidding, construction, and operation of construction projects in compliance with all award requirements. The recipient must comply with, and must require all contractors and subcontractors, to comply with all federal, state, and local laws and regulations. The recipient must ensure compliance with special award conditions which may contain conditions that must be satisfied prior to advertisement of bids, start of construction, or another critical event.

4. Title

- a. Prior to receiving Treasury authorization to start construction, the recipient must furnish evidence, satisfactory to Treasury, that the recipient has acquired good and merchantable title free of all mortgages, foreclosable liens, or encumbrances, to all land, rights of way, and easements necessary for the completion of the project.
- b. When property has been newly acquired for the project, the recipient must provide the following as evidence of clear title to the property:
 - i. A copy of the recorded deed or equivalent conveyance document showing the recipient acquired title to the property; and
 - ii. A copy of the title insurance (also known as title policy), title report, or title opinion (by attorney(s) licensed in the jurisdiction where the property is located) completed after the real estate acquisition showing the recipient obtained title to the property free of any encumbrances (i.e., foreclosable liens, easements, or any other limitations on use that interferes with the recipient's intended use, operation, construction, maintenance of the

property, or Treasury's federal interest). The title insurance, title report, or title opinion should include the legal description of the property.

- c. When the property to be used for the project has not been newly acquired, the recipient must provide the following as evidence of clear title to the property both of the items listed in (b) above, provided that the copy of the title insurance, title report, title opinion, or equivalent must be completed within the last year. If such evidence is more than one year old, the recipient must provide Treasury with an explanation, which Treasury may in its discretion decline to accept.
- d. When easements, rights-of-way, or other rights are required for the completion of the project, the recipient must provide the following documentation:
 - i. A copy of the easement deed or equivalent conveyance document; and
 - ii. A copy of the title insurance, title report, or title opinion (by attorney(s) licensed in the jurisdiction where the property is located).
- e. When use of or access to leased property is required for the project, the recipient must provide the following evidence of control of the leased property:
 - i. A copy of the lease signed by the lessor and recipient that provides a lease term equivalent to the estimated useful life (EUL) of the project or renewable for that period; and
 - ii. A certification from the recipient that it has control of all project property or improvements to the property and is not aware of any material restrictions or encumbrances that could interfere with any award purpose for the duration of the EUL. If this changes within the course of the EUL, the recipient must provide timely notice to Treasury. The federal interest may be waived, if it is decided that recording the federal interest is not feasible, then Treasury may include a special award condition on the award that the recipient will repay the federal interest if the lessor terminates the lease before the EUL of the project expires or if the recipient or lessor uses the property in a manner inconsistent with the public purpose(s) of the award during the EUL of the improvements or construction, as applicable.
- f. When the project involves linear construction/improvement, road construction, or other less common types of construction, recipients should contact Treasury for guidance on the types of evidence of title required.
- g. Notwithstanding (a)-(f), Treasury may in its discretion accept only a copy of the title insurance, title report, title opinion, or equivalent as evidence of title (or easement or other rights) if the recipient is unable to produce the relevant conveyance document.
- h. In all cases, recipients must disclose any ongoing litigation concerning the project property prior to seeking Treasury's permission to proceed with construction.

5. **Permitting Requirements**

Prior to receiving Treasury permission to proceed with construction, the recipient must furnish evidence, satisfactory to Treasury, that recipient has received all federal, state and local permits necessary for the completion of the project. In extraordinary circumstances and at Treasury's sole discretion, Treasury may accept alternate documentation such as, draft permits, which must be finalized within a specified time as determined by Treasury after approval of a request for notice to proceed with construction.

6. **Estimated Useful Life**

- a. Property that is acquired or improved, in whole or in part, with federal assistance is held in trust by the recipient for the purpose(s) for which the award was made for the Estimated Useful Life. Estimated Useful Life means the period of years that constitutes the expected useful lifespan of a project, as determined by Treasury. The recipient must propose an Estimated Useful Life from the date of construction completion either prior to award or initiation of construction. If the Estimated Useful Life is provided in the application, Treasury's issuance of the grant agreement represents its concurrence with the recipient's proposed Estimated Useful Life.
- b. The recipient's obligation to the federal government continues for the Estimated Useful Life of the project, as determined by Treasury, during which Treasury retains an undivided equitable reversionary interest (the "federal interest") in the property acquired or improved, in whole or in part, with the Treasury investment.
- c. If Treasury determines that the recipient has failed or fails to meet its obligations under the terms and conditions of this award, Treasury may exercise its rights or remedies with respect to its federal interest in the project. However, Treasury's forbearance in exercising any right or remedy in connection with the federal interest does not constitute a waiver thereof.
- d. At its discretion, Treasury may waive the requirement to establish an Estimated Useful Life for environmental restoration projects.

7. **Recording the Federal Interest in the Real Property**

Pursuant to 2 C.F.R. § 200.316, Treasury retains an undivided equitable reversionary interest in real property (a "federal interest") that is acquired or improved, in whole or in part with RESTORE Act Direct Component funds, which must be held in trust by the recipient for the benefit of the project for the Estimated Useful Life of the project.

To document the federal interest, the recipient must prepare and properly record a "Covenant of Purpose, Use and Ownership" (Covenant), or, where a subrecipient is the title owner, the recipient must ensure that the subrecipient prepares and properly records a "Covenant of Purpose, Use and Ownership" (Covenant) on the property acquired or improved with RESTORE Act Direct Component funds. This Covenant does not establish a traditional mortgage lien in that it does not establish a traditional creditor relationship requiring the periodic repayment of principal and interest, or the ability of Treasury to foreclose on the real property at any time. Rather, pursuant to the Covenant, the recipient and/or the subrecipient, as applicable, acknowledges that it holds title to the real property in trust for the public purposes of the financial assistance award and agrees, among other commitments, that it will repay the federal interest if it disposes of or alienates its interest in the real property, or uses it in a manner inconsistent with the public purposes of the award, during the Estimated Useful Life of the property.

- a. The Covenant must be satisfactory in form and substance to Treasury and must include the name and current address of the recipient and/or subrecipient (if applicable), the award number, amount, date of award, subrecipient agreement (if applicable), date of the purchase of property (if applicable), and the Estimated Useful Life of the project. It must also include statements that the real property will only be used for purposes consistent with the RESTORE Act and Treasury's implementing regulations, 31 C.F.R. Part 34; that it will not be mortgaged or used as collateral, sold, or otherwise transferred to another party without the written permission of Treasury; and that the federal interest cannot be subordinated, diminished, nullified, or released through encumbrance of the property, transfer of the property to another party, or any other action the recipient/subrecipient takes without the written permission of Treasury.
- b. The recipient agrees to provide to Treasury a title insurance (also known as title

policy), title report, or title opinion as to the title owner of the property, and to properly record the Covenant, in accordance with applicable law in the real property records in the jurisdiction in which the real property is located in order to provide public record notice to interested parties that there are certain restrictions on the use and disposition of the real property during its Estimated Useful Life, and that Treasury retains an undivided equitable reversionary interest in the real property to the extent of its participation in the project for which funds have been awarded.

- c. Treasury requires title insurance, a title report, or a title opinion from the recipient to substantiate that the Covenant has been properly recorded.
- d. Failure to properly and timely file and maintain documentation of the federal interest may result in appropriate enforcement action, including, but not limited to, disallowance of the cost of the acquisition or improvement by Treasury.
- e. The Federal Interest must be perfected and recorded/filed in accordance with state and/or local law concurrent with the acquisition of the real property, where an award includes real property acquisition, and for construction of buildings and projects to improve the real property, no later than the date construction and/or improvement work commences.
- f. When the Estimated Useful Life of the project is ended, the federal interest is extinguished, and Treasury has no further interest in the real property.
- g. Exclusions from the requirement that the federal interest on real property be recorded will be at Treasury's sole discretion. The types of projects for which Treasury may agree to this exclusion include, but are not limited to, the following: work which involves no above grade structures, work within utility easements, work on leased property, improvements to state parks, water and sewer lateral line projects affecting private properties, and shoreline stabilization projects and other restoration projects.

8. **Use of Real Property**

Encumbering real property on which there is a federal interest without prior Treasury approval is an unauthorized use of the property and of project trust funds under this award. See 2 C.F.R. § 200.316. Real property or interest in real property may not be used for purposes other than the authorized purpose of the award without the express, prior written approval of Treasury, for as long as the federal government retains an interest in the property. The property must not be sold, conveyed, transferred, assigned, mortgaged, or in any other manner encumbered except as expressly authorized in writing by Treasury. The recipient must maintain facilities constructed or renovated with grant funds in a manner consistent with the purposes for which the funds were provided for the duration of the Estimated Useful Life.

In the event that the real property or interest in real property is no longer needed for the originally authorized purpose, the recipient must obtain disposition instructions from Treasury consistent with 2 C.F.R. § 200.311.

9. **Administration, Operation and Maintenance**

The recipient agrees to administer, operate, and maintain the project for its Estimated Useful Life in the same manner in which it operates and maintains similar facilities and equipment owned by it, and in accordance with state and local standards, laws and regulations. The recipient must not be in breach of its obligations under this award except to the extent the failure to fulfill any obligation is due to an Uncontrollable Force. "Uncontrollable Force" means an event beyond the reasonable control of, and without the fault or negligence of, the party claiming the Uncontrollable Force that prevents the recipient from honoring its contractual obligations under this Agreement and which, by

exercise of the recipient's reasonable care, diligence and foresight, such recipient was unable to avoid. Uncontrollable Forces include, but are not limited to:

- a. Strikes or work stoppage;
- b. Floods, earthquakes, or other natural disasters;
- c. Terrorist acts; and
- d. Final orders or injunctions issued by a court or regulatory body having competent subject matter jurisdiction which the recipient, claiming the Uncontrollable Force, after diligent efforts, was unable to have stayed, suspended, or set aside pending review by a court of competent subject matter jurisdiction. Neither the unavailability of funds or financing, nor conditions of national or local economies or markets must be considered an Uncontrollable Force.

10. **Commencement of Construction**

The recipient must not commence construction prior to the date of the Award. The recipient must make a written request to Treasury for permission to commence with construction after the construction contractor has been selected and at least 30 days prior to construction. For project costs to be eligible for Treasury reimbursement, Treasury must determine that the award of all contracts with associated costs are in compliance with the scope of the project and all terms and conditions of this award, and that all necessary permits have been or will be obtained, all Special Award Conditions tied to the commencement of construction have been satisfied, and the federal interest is secure. No construction funds may be drawn from ASAP without Treasury's written permission. If the recipient commences construction prior to Treasury's determination, the recipient proceeds at its own risk.

Treasury will only review contract amendments or change orders which change the scope of a contract.

11. **Insurance**

The recipient must, at a minimum, provide the equivalent insurance coverage for real property improved with federal funds as provided to property owned by the recipient state, county or parish, in compliance with 2 C.F.R. § 200.310.

12. **Bonding**

For construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold, the recipient or pass-through entity may request in writing that Treasury accept its bonding policy and requirements. If Treasury determines that the federal interest in the project is adequately protected, the recipient or pass-through entity need not comply with the following three bonding requirements. For all other recipients and pass-through entities, the minimum requirements for construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold are as follows:

- a. A bid guarantee from each bidder equivalent to five percent of the bid price. The "bid guarantee" must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual instruments as may be required within the time specified.
- b. A performance bond on the part of the contractor for 100 percent of the contract

price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

- c. A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

13. **Floodplain Requirements**

In accordance with 44 C.F.R. Part 9, prior to Treasury’s permission to commence construction in a designated 100-year floodplain, the recipient must provide evidence satisfactory to Treasury of a Floodplain Notice, that the 30-day period established for receipt of comments from the public in response to public notice published regarding the potential for adverse project impact on the values and functions of a designated 100-year floodplain has expired and that identified concerns (if any) have been addressed to Treasury’s satisfaction. This notice may be satisfied through a federal/state environmental assessment process used as the vehicle for public notice, involvement, and explanation per 44 C.F.R. § 9.8(2).

In addition, prior to Treasury’s authorization to commence construction of structures and/or buildings within a designated 100-year floodplain, the recipient must provide evidence satisfactory to Treasury of the following:

- a. Floodplain Protection: That the project engineer/architect has certified that the project facility will be adequately protected from damage by floods in this area of apparent potential flood hazard. The evidence must include adequate justification for the Base Flood Elevation designation for the financial assistance award site.
- b. Floodplain Insurance: That the community is participating in the National Flood Insurance Program, and that as required, the recipient will purchase flood insurance.

14. **Goals for Women and Minorities in Construction**

Department of Labor regulations set forth in 41 C.F.R. § 60-4 establish goals and timetables for participation of minorities and women in the construction industry. These regulations apply to all federally assisted construction contracts in excess of \$10,000. The recipient must comply with these regulations and must obtain compliance with 41 C.F.R. § 60-4 from contractors and subcontractors employed in the completion of the project by including such notices, clauses and provisions in the Solicitations for Offers or Bids as required by 41 C.F.R. § 60-4.

- a. The goal for participation of women in each trade area must be as follows: From April 1, 1981, until further notice: 6.9 percent;
- b. All changes to this goal, as published in the Federal Register in accordance with the Office of Federal Contract Compliance Programs regulations at 41 C.F.R. § 60-4.6, or any successor regulations, must hereafter be incorporated by reference into these Special Award Conditions; and,
- c. Goals for minority participation must be as prescribed by Appendix B-80, Federal Register, Volume 45, No. 194, October 3, 1980, or subsequent publications. The recipient must include the “Standard Federal Equal Employment Opportunity Construction Contract Specifications” (or cause them to be included, if appropriate) in all federally assisted contracts and subcontracts. The goals and timetables for minority and female participation may not be less than those

published pursuant to 41 C.F.R. § 60-4.6.

15. **Davis Bacon Act, as amended (40 U.S.C. §§ 3141–3148)**

Davis-Bacon Act-related provisions outlined in 33 U.S.C. § 1372 are applicable to RESTORE Act grants that fund a construction project that is a “treatment works” project as defined in 33 U.S.C. § 1292; or a construction project regardless of whether it is a “treatment works” project when RESTORE Act Direct Component grant funds are used on a construction project in conjunction with federal assistance from another federal agency operating under an authority that requires the enforcement of Davis-Bacon Act-related provisions.

a. “Treatment works” is defined in 33 U.S.C. § 1292, and means any:

i. Devices and systems:

- 1) Used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature to implement 33 U.S.C. § 1281; or
- 2) Necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, outfall ewers, sewage collection systems, pumping, power, and other equipment, and their appurtenances; extensions, improvements, remodeling, additions, and alterations to those devices and system; and

ii. Elements essential to provide a reliable recycled supply of water such as standby treatment units and clear well facilities;

iii. Acquisition of the land that will be an integral part of the treatment process (including land used for the storage of treated wastewater in land treatment systems prior to land application) or will be used for ultimate disposal of residues resulting from such treatment and acquisition of other land, and interests in land, that are necessary for construction; or

Any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste, including storm water runoff, or industrial waste, including waste in combined storm water and sanitary sewer systems.

b. When Davis-Bacon Act-related provisions applies, the recipient must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141–3144, and §§ 3146–3148) as supplemented by Department of Labor regulations (29 C.F.R. Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”) in all prime construction contracts in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds. The recipient must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. For information on the current prevailing wage rate determination for a specific locality go to <https://sam.gov/content/wage-determinations>. If there is no prevailing wage rate determination for your locality, recipients should contact the U.S. Department of Labor at 1-866-487-2365 on how to obtain a prevailing wage rate determination.

c. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. In accordance with the statute and regulations, contractors are required to pay wages to laborers and mechanics at

a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor and required to pay wages not less than once a week. The contractor shall submit weekly for each week in which any contract work is performed, a copy of all payrolls to the recipient. The required weekly payroll information may be submitted in any form desired. A contractor may use Form WH-347 which is available at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification>.

- d. The prime contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. The recipient must report all suspected or reported violations to Treasury.
- e. The wage determination (including any additional classification and wage rates) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. The posters can be found at <https://www.dol.gov/whd/programs/dbra/wh1321.htm>.
- f. The recipient must include all the following contract clauses outlined in 29 C.F.R. § 5.5(a) in all construction contracts subject to the Davis-Bacon and Related Acts requirements, which are in excess of \$2,000 and entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from RESTORE Act Direct Component grant funds, and ensure that any subrecipient also includes these contract clauses in all construction contracts subject to the Davis-Bacon Act requirements (see Appendix III of this document).
- g. **Contract Provision for Contracts in Excess of \$100,000: Contract Work Hours and Safety Standards Act.** All contracts awarded by the recipient or subrecipient in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations at 29 C.F.R. § 5.5(b). Under 40 U.S.C. § 3702, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. **These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.** The recipient or subrecipient shall insert the clauses set forth in 29 C.F.R. §§ 5.5(b)(1) through (4) in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 C.F.R. § 5.5(a). As used in this paragraph, the terms *laborers* and *mechanics* include watchmen and guards. See Appendix IV of this document for the Contract Clauses Required for Contracts Subject to the Requirements of the Contract Work Hours and Safety Standards Act.
- h. In addition to the clauses contained in 29 C.F.R. § 5.5(b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 C.F.R. § 5.1, the recipient or subrecipient shall insert a

clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the recipient or subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the recipient, Department of Treasury, and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

- i. **Enforcement:** In accordance with 29 C.F.R. § 5.6(a)(1), Treasury has the responsibility to ascertain whether the clauses required by 29 C.F.R. § 5.5 have been inserted in the contracts subject to the labor standards provisions of the Acts contained in 29 C.F.R. § 5.1. Pursuant to 29 C.F.R. § 5.6(a)(3), Treasury may cause investigations to be made by the recipient as may be necessary to ensure compliance with the labor standards clauses required by 29 C.F.R. § 5.5 and the applicable statutes listed in 29 C.F.R. § 5.1. Investigations shall be made of all contracts with such frequency as may be necessary to ensure compliance. Such investigations shall include interviews with employees, which shall be taken in confidence, and examinations of payroll data and evidence of registration and certification with respect to apprenticeship and training plans. In making such examinations, particular care shall be taken to determine the correctness of classifications and to determine whether there is a disproportionate employment of laborers and of apprentices or trainees registered in approved programs. Such investigations shall also include evidence of fringe benefit plans and payments thereunder. Complaints of alleged violations shall be given priority.

16. **Equal Opportunity Clause**

Pursuant to 41 C.F.R. § 60-1.4(b), federally-assisted construction contracts, for construction which is not exempt from the requirements of the equal opportunity clause, 41 C.F.R. Part 60-1—Obligations of Contractors and Subcontractors, the recipient hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 C.F.R. Chapter 60, which is paid for in whole or in part with funds obtained from the federal government or borrowed on the credit of the federal government pursuant to a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause: See Appendix V for the full text of 41 C.F.R. § 60-1.4.

17. **Revised ADA Standards for Accessible Design for Construction Awards**

The U.S. Department of Justice has issued revised regulations implementing Title II of the ADA (28 C.F.R. Part 35) and Title III of the ADA (28 C.F.R. Part 36). The revised regulations adopted new enforceable accessibility standards called the “2010 ADA Standards for Accessible Design” (2010 Standards). The 2010 Standards are an acceptable alternative to the Uniform Federal Accessibility Standards (UFAS). Treasury deems compliance with the 2010 Standards to be an acceptable means of complying with the Section 504 accessibility requirements for new construction and alteration projects. All new construction and alteration projects must comply with the 2010 Standards.

18. **Supplies and Equipment**

- a. Requirements that are applicable to recipients that are states:
 - i. Equipment: The recipient must use, manage, and dispose of equipment acquired under this Award in accordance with state laws and procedures.
 - ii. Supplies: If the recipient has a residual inventory of unused supplies exceeding \$5,000 in total aggregate value upon termination or completion of the activity, project, or program and the supplies are not needed for any other federal award, the recipient must report the value and the retention or sale of such supplies by submitting to Treasury a completed *SF-428 Tangible Personal Property Report* and *SF-428-B Final Report Form* no later than 60 days after the end of the Period of Performance.
- b. Requirements that are applicable to recipients that are not states:
 - i. Equipment and Supplies: During the period of performance, the recipient must seek disposition instructions from Treasury for equipment and/or unused or residual supplies acquired under this Award if the current fair market value of the equipment and/or unused or residual supplies is greater than \$5,000 per unit. The recipient must seek disposition instructions before disposing of the property by submitting a completed *SF-428 Tangible Personal Property Report* and *SF-428-C Disposition Request/Report*. Not later than 60 days after the end of the period of performance, the recipient must submit to Treasury a completed *SF-428 Tangible Personal Property Report* and *SF-428-B Final Report Form* if the recipient retains any equipment with a current fair market value greater than \$5,000 per unit or a residual inventory of unused supplies exceeding \$5,000 in total aggregate value upon termination or completion of the activity, project, or program and the equipment and/or supplies are not needed for any other federal award.

T MISCELLANEOUS REQUIREMENTS AND PROVISIONS

The recipient must comply with all miscellaneous requirements and provisions described in this section and, when applicable, require its subrecipients, contractors, and subcontractors to comply. This list is not exclusive:

1. **Prohibition Against Assignment by the Recipient**
Notwithstanding any other provision of this Award, the recipient must not transfer, pledge, mortgage, or otherwise assign this Award, or any interest therein, or any claim arising thereunder, to any party or parties, banks, trust companies, or other financing or financial institutions without the express written approval of Treasury.
2. **Disclaimer Provisions**
 - a. The United States expressly disclaims any and all responsibility or liability to the recipient or third persons for the actions of the recipient or third persons resulting in death, bodily injury, property damages, or any other losses resulting in any way from the performance of this Award or any other losses resulting in any way from the performance of this Award or any subaward, contract, or subcontract under this Award.
 - b. The acceptance of this Award by the recipient does not in any way constitute an agency relationship between the United States and the recipient.
3. **Prohibited and Criminal Activities**

- a. The Program Fraud Civil Remedies Act of 1986 (31 U.S.C. §§ 3801-3812), provides for the imposition of civil penalties against persons who make false, fictitious, or fraudulent claims to the federal government for money (including money representing grants, loans or other benefits).
- b. False Statements, as amended (18 U.S.C. § 1001) provides that whoever makes or presents any materially false, fictitious, or fraudulent statements to the United States shall be subject to imprisonment of not more than five years.
- c. False, Fictitious, or Fraudulent Claims, as amended (18 U.S.C. § 287) provides that whoever makes or presents a false, fictitious, or fraudulent claim against or to the United States shall be subject to imprisonment of not more than five years and shall be subject to a fine in the amount provided in 18 U.S.C. § 287.
- d. False Claims Act (31 U.S.C. §§ 3729-3732), provides that suits under this act can be brought by the federal government, or a person on behalf of the federal government, for false claims under federal assistance programs
- e. Copeland “Anti-Kickback” Act (41 U.S.C §§ 1320a-7b(b)) prohibits a person or organization engaged in a federally supported project from enticing an employee working on the project from giving up a part of his compensation under an employment contract. The Copeland “Anti-Kickback” Act also applies to contractors and subcontractors pursuant to 40 U.S.C. § 3145.

4. **Limitations on Political Activities of Employees**

The recipient must comply, as applicable, with provisions of the Hatch Act, as amended (5 U.S.C. §§ 1501-1508 and §§ 7321-7326) which limit the political activities of employees whose principal employment activities are funded in whole or in part with federal funds.

5. **Drug-Free Workplace**

The recipient must comply with the provisions of the Drug-Free Workplace Act of 1988 (Public Law 100-690, Title V, Sec. 5153, as amended by Public Law 105-85, Div. A, Title VIII, Sec. 809, as codified at 41 U.S.C. § 8102), and Treasury implementing regulations at 31 C.F.R. Part 20, which require that the recipient take steps to provide a drug-free workplace.

6. **Increasing Seat Belt Use in the United States**

Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 8, 1997), Recipient should encourage its employees and should encourage contractors to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented or personally owned vehicles.

7. **Reducing Text Messaging While Driving**

Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 1, 2009), recipient should encourage its employees, subrecipients, and contractors to adopt and enforce policies that ban text messaging while driving, and recipient should establish workplace safety policies to decrease accidents caused by distracted drivers.

8. **Minority Serving Institutions (MSIs) Initiative**

Pursuant to EOs 13555 and 13270, as amended, Treasury is strongly committed to broadening the participation of MSIs in its financial assistance programs. Treasury's goals include achieving full participation of MSIs in order to advance the development of human potential, strengthen the nation's capacity to provide high-quality education, and increase opportunities for MSIs to participate in and benefit from federal financial assistance programs. Treasury encourages recipients to include meaningful participation of MSIs. Institutions eligible to be considered MSIs are listed on the Department of Education website at <http://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

9. **Research Misconduct**

Treasury adopts, and applies to Awards for research, the Federal Policy on Research Misconduct (Federal Policy) issued by the EO of the President's Office of Science and Technology Policy on December 6, 2000 (65 Fed. Reg. 76260 (2000)). As provided for in the Federal Policy, research misconduct refers to the fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. Research misconduct does not include honest errors or differences of opinion. Recipients that conduct research funded by Treasury must foster an atmosphere conducive to the responsible conduct of sponsored research by safeguarding against and resolving allegations of research misconduct. Recipients also have the primary responsibility to prevent, detect, and investigate allegations of research misconduct and, for this purpose, may rely on their internal policies and procedures, as appropriate, to do so. Award funds expended on an activity that is determined to be invalid or unreliable because of research misconduct may result in appropriate enforcement action under the Award, up to and including Award termination and possible suspension or debarment. Treasury requires that any allegation that contains sufficient information to proceed with an inquiry be submitted to Treasury, which will also notify the Treasury Office of Inspector General of such allegation. Once the recipient has investigated the allegation, it will submit its findings to Treasury. Treasury may accept the recipient's findings or proceed with its own investigation; Treasury shall inform the recipient of the Treasury's final determination.

10. **Care and Use of Live Vertebrate Animals**

Recipients must comply with the Laboratory Animal Welfare Act of 1966 (Public Law 89-544), as amended, (7 U.S.C. § 2131 et seq.) (animal acquisition, transport, care, handling, and use in projects), and implementing regulations, 9 C.F.R. Parts 1, 2, and 3; the Endangered Species Act, as amended, (16 U.S.C. § 1531 et seq.); Marine Mammal Protection Act, as amended, (16 U.S.C. § 1361 et seq.) (taking possession, transport, purchase, sale, export or import of wildlife and plants); the Nonindigenous Aquatic Nuisance Prevention and Control Act, as amended, (16 U.S.C. § 4701 et seq.) (ensure preventive measures are taken or that probable harm of using species is minimal if there is an escape or release); and all other applicable statutes pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by federal financial assistance.

11. **The Trafficking Victims Protection Act of 2000, as amended. (22 U.S.C. § 7104(g)), and the implementing regulations at 2 C.F.R. Part 175**

The Trafficking Victims Protection Act of 2000 authorizes termination of financial assistance provided to a private entity, as defined in 2 C.F.R. §175.25(d), without penalty to the federal government, if the recipient or subrecipient engages in certain activities related to trafficking in persons.

- a. Provisions applicable to a recipient that is a private entity:
 - i. You as the recipient, your employees, subrecipients under this Award,

and subrecipients' employees may not—

- a) Engage in severe forms of trafficking in persons during the period of time that this Award is in effect;
 - b) Procure a commercial sex act during the period of time that this Award is in effect; or
 - c) Use forced labor in the performance of this Award or subawards under this Award.
- ii. We as the federal awarding agency may unilaterally terminate this Award, without penalty, if you or a subrecipient that is a private entity —
 - a) Is determined to have violated a prohibition in paragraph a.1 of this Section V.10; or
 - b) Has an employee who is determined by the agency official authorized to terminate this Award to have violated a prohibition in paragraph a.1 of this Section V.10 through conduct that is either—
 - 1) Associated with performance under this Award; or
 - 2) Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 C.F.R. Part 180, “OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement),” as implemented by our agency at 31 C.F.R. Part 19.
- b. Provision applicable to a recipient other than a private entity. We as the federal awarding agency may unilaterally terminate this Award, without penalty, if a subrecipient that is a private entity—
 - i. Is determined to have violated an applicable prohibition in paragraph a.1 of this Section V.10; or
 - ii. Has an employee who is determined by the agency official authorized to terminate this Award to have violated an applicable prohibition in paragraph (a) of this Section through conduct that is either:
 - a) Associated with performance under this Award; or
 - b) Imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 C.F.R. Part 180, “OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement),” as implemented by our agency at 31 C.F.R. Part 19.
- c. Provisions applicable to any recipient:
 - i. You must inform us immediately of any information you receive from any source alleging a violation of a prohibition of this section.
 - ii. Our right to terminate unilaterally that is described in paragraph a.2 or b of this section:
 - a) Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. § 7104(g)), and
 - b) Is in addition to all other remedies for noncompliance that are available to us under this Award.
 - iii. You must include the requirements of this section in any subaward you

make to a private entity.

- d. *Definitions.* For purposes of this award term:
- i. "Employee" means either:
 - a) An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this Award; or
 - b) Another person engaged in the performance of the project or program under this Award and not compensated by you including, but not limited to, a volunteer or individual whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.
 - ii. "Forced labor" means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.
 - iii. "Private entity":
 - a) Means any entity other than a state, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 C.F.R. § 175.25.
 - b) Includes:
 - 1) A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 C.F.R. § 175.25(b); or
 - 2) A for-profit organization.
 - iv. "Severe forms of trafficking in persons," "commercial sex act," and "coercion" have the meanings given at § 103 of the TVPA, as amended (22 U.S.C. § 7102).

12. **Publications and Signage**

Any publications (written, curricula, visual, sound, reports, or websites) except scientific articles or papers appearing in scientific, technical, or professional journals or signage produced with funds from this Award, which informs the public about the activities funded in whole or in part by this Award, must clearly display the following language:

Publications:

"This project was funded in whole or in part by grant [number] awarded by the U.S. Department of the Treasury under the RESTORE Act [Direct Component or Centers of Excellence Research Grants] program. The opinions, statements, findings, conclusions, and recommendations contained herein are those of the author(s) or contributor(s) and do not necessarily represent the official position, views, or policies of the U.S. Department of the Treasury. References to specific individuals, agencies, companies, products, or services should not be considered an endorsement by the author(s), contributor(s), or the U.S. Department of the Treasury."

Signage:

"This project was funded by a grant from the U.S. Department of the Treasury under the

RESTORE Act [Direct Component or Centers of Excellence Research Grants] Program.”

13. **Copyright**

If applicable, Recipient may copyright any work that is subject to copyright and was developed, or for which ownership was acquired, under this award in accordance with 2 C.F.R. § 200.315(b). The U.S. Department of the Treasury reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish, or otherwise use the work, in whole or in part (including create derivative works), for Federal Government purposes, and to authorize others to do so. Treasury also reserves the right, at its discretion, not to publish deliverables and other materials developed under this award as a Treasury resource.

Products and deliverables developed with award funds and published as a U.S. Department of the Treasury resource will contain the following copyright notice:

“This resource was developed under a federal award and may be subject to copyright. The U.S. Department of the Treasury reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish, or otherwise use the work for Federal Government purposes and to authorize others to do so. This resource may be freely distributed and used for noncommercial and educational purposes only.”

14. **Homeland Security Presidential Directive 12**

If the performance of this Award requires the recipient’s personnel to have routine access to Treasury-controlled facilities and/or Treasury-controlled information systems (for purpose of this term “routine access” is defined as more than 180 days), such personnel must undergo the personal identity verification credential process. In the case of foreign nationals, Treasury will conduct a check with U.S. Citizenship and Immigration Services’ (USCIS) Verification Division, a component of the Department of Homeland Security (DHS), to ensure the individual is in a lawful immigration status and that he or she is eligible for employment within the United States. Any items or services delivered under this Award must comply with Treasury personal identity verification procedures that implement Homeland Security Presidential Directive 12, “Policy for a Common Identification Standard for Federal Employees and Contractors”, FIPS PUB 201, as amended, and OMB Memorandum M-05-24, as amended. The recipient must ensure that its subrecipients and contractors (at all tiers) performing work under this Award comply with the requirements contained in this section. Treasury may delay final payment under this Award if the subrecipient or contractor fails to comply with the requirements listed in this section. The recipient must insert the following term in all subawards and contracts when the subrecipient or contractor is required to have routine physical access to a Treasury-controlled facility or routine access to a Treasury-controlled information system:

- a. The subrecipient or contractor must comply with Treasury personal identity verification procedures identified in the subaward or contract that implement Homeland Security Presidential Directive 12 (HSPD-12), Office of Management and Budget (OMB) Guidance M-05-24, as amended, and Federal Information Processing Standards Publication, FIPS PUB 140-2, as amended, for all employees under this subaward or contract who require routine physical access to a federally controlled facility or routine access to a federally controlled information system.
- b. The subrecipient or contractor must account for all forms of government-provided identification issued to the subrecipient or contractor employees in connection with performance under this subaward or contract. The subrecipient or contractor must return such identification to the issuing agency at the earliest of any of the following, unless otherwise determined by Treasury:
 - i. When no longer needed for subaward or contract performance;

- ii. Upon completion of the subrecipient or contractor employee's employment; or
- iii. Upon subaward or contract completion or termination.

15. **Export Control**

- a. This clause applies to the extent that this Award involves access to export-controlled items.
- b. In performing this financial assistance Award, the recipient may gain access to items subject to export control (export-controlled items) under the Export Administration Regulations (EAR) issued by the Department of Commerce (DOC). The recipient is responsible for compliance with all applicable laws and regulations regarding export-controlled items, including the EAR's deemed exports and re-exports provisions. The recipient shall establish and maintain effective export compliance procedures throughout performance of the Award. At a minimum, these export compliance procedures must include adequate controls of physical, verbal, visual, and electronic access to export-controlled items, including by foreign nationals.
- c. Definitions:
 - i. Export-controlled items. Items (commodities, software, or technology), that are subject to the EAR (15 C.F.R. §§ 730–774), implemented by the DOC's Bureau of Industry and Security. These are generally known as "dual-use" items, items with a military and commercial application.
 - ii. Deemed Export/Re-export. The EAR defines a deemed export as a release of export-controlled items (specifically, technology or source code) to a foreign national in the U.S. Such release is "deemed" to be an export to the home country of the foreign national. 15 C.F.R. § 734.2(b)(2)(ii). A release may take the form of visual inspection, oral exchange of information, or the application abroad of knowledge or technical experience acquired in the United States. If such a release occurs abroad, it is considered a deemed re-export to the foreign national's home country. Licenses from DOC may be required for deemed exports or re-exports.
- d. The recipient shall control access to all export-controlled items that it possesses or that comes into its possession in performance of this Award, to ensure that access to, or release of, such items are restricted, or licensed, as required by applicable federal statutes, EOs, and/or regulations, including the EAR.
- e. To the extent the recipient wishes to provide foreign nationals with access to export-controlled items, the recipient shall be responsible for obtaining any necessary licenses, including licenses required under the EAR for deemed exports or deemed re-exports.
- f. Nothing in the terms of this Award is intended to change, supersede, or waive the requirements of applicable federal statutes, EOs, and/or regulations.
- g. Compliance with this section will not satisfy any legal obligations the recipient may have regarding items that may be subject to export controls administered by other agencies such as the Department of State, which has jurisdiction over exports of munitions items subject to the International Traffic in Arms Regulations (ITAR) (22 C.F.R. §§ 120–130), including releases of such items to foreign nationals.
- h. The recipient shall include this clause, including this paragraph (i), in all lower-tier

transactions (subawards, contracts, and subcontracts) under this Award that may involve access to export-controlled items.

APPENDIX I: 2 C.F.R. PART 170, APPENDIX A

I. Reporting Subawards and Executive Compensation

a. Reporting of first-tier subawards.

1. Applicability. Unless you are exempt as provided in paragraph d. of this award term, you must report each action that equals or exceeds \$30,000 in Federal funds for a subaward to a non-Federal entity or Federal agency (see definitions in paragraph e. of this award term).
2. Where and when to report.
 - i. The non-Federal entity or Federal agency must report each obligating action described in paragraph a.1. of this award term to <http://www.fsrs.gov>.
 - ii. For subaward information, report no later than the end of the month following the month in which the obligation was made. (For example, if the obligation was made on November 7, 2010, the obligation must be reported by no later than December 31, 2010.)
3. What to report. You must report the information about each obligating action that the submission instructions posted at <http://www.fsrs.gov> specify.

b. Reporting total compensation of recipient executives for non-Federal entities.

1. Applicability and what to report. You must report total compensation for each of your five most highly compensated executives for the preceding completed fiscal year, if -
 - i. The total Federal funding authorized to date under this Federal award equals or exceeds \$30,000 as defined in [2 CFR 170.320](#);
 - ii. in the preceding fiscal year, you received -
 - (A) 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at [2 CFR 170.320](#) (and subawards), and
 - (B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at [2 CFR 170.320](#) (and subawards); and,
 - iii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 ([15 U.S.C. 78m\(a\), 78o\(d\)](#)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)
2. Where and when to report. You must report executive total compensation described in paragraph b.1. of this award term:
 - i. As part of your registration profile at <https://www.sam.gov>.
 - ii. By the end of the month following the month in which this award is made, and annually thereafter.

c. Reporting of Total Compensation of Subrecipient Executives.

1. Applicability and what to report. Unless you are exempt as provided in paragraph d. of this award term, for each first-tier non-Federal entity subrecipient under this award, you shall report the names and total compensation of each of the subrecipient's five most highly compensated executives for the subrecipient's preceding completed fiscal year, if -
 - i. in the subrecipient's preceding fiscal year, the subrecipient received -
 - (A) 80 percent or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at [2 CFR 170.320](#) (and subawards) and,
 - (B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and

subawards); and

ii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 ([15 U.S.C. 78m\(a\), 78o\(d\)](#)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)

2. Where and when to report. You must report subrecipient executive total compensation described in paragraph c.1. of this award term:

i. To the recipient.

ii. By the end of the month following the month during which you make the subaward. For example, if a subaward is obligated on any date during the month of October of a given year (i.e., between October 1 and 31), you must report any required compensation information of the subrecipient by November 30 of that year.

d. Exemptions.

If, in the previous tax year, you had gross income, from all sources, under \$300,000, you are exempt from the requirements to report:

i. Subawards, and

ii. The total compensation of the five most highly compensated executives of any subrecipient.

e. Definitions. For purposes of this award term:

1. Federal Agency means a Federal agency as defined at [5 U.S.C. 551\(1\)](#) and further clarified by [5 U.S.C. 552\(f\)](#).

2. Non-Federal entity means all of the following, as defined in [2 CFR part 25](#):

i. A Governmental organization, which is a State, local government, or Indian tribe;

ii. A foreign public entity;

iii. A domestic or foreign nonprofit organization; and,

iv. A domestic or foreign for-profit organization

3. Executive means officers, managing partners, or any other employees in management positions.

4. Subaward:

i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.

ii. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see [2 CFR 200.331](#)).

iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.

5. Subrecipient means a non-Federal entity or Federal agency that:

i. Receives a subaward from you (the recipient) under this award; and

ii. Is accountable to you for the use of the Federal funds provided by the subaward.

6. Total compensation means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see [17 CFR 229.402\(c\)\(2\)](#)).

APPENDIX II: 2 C.F.R. PART 25, APPENDIX A

A. Requirement for System for Award Management

Unless you are exempted from this requirement under [2 CFR 25.110](#), you as the recipient must maintain current information in the SAM. This includes information on your immediate and highest level owner and subsidiaries, as well as on all of your predecessors that have been awarded a Federal contract or Federal financial assistance within the last three years, if applicable, until you submit the final financial report required under this Federal award or receive the final payment, whichever is later. This requires that you review and update the information at least annually after the initial registration, and more frequently if required by changes in your information or another Federal award term.

B. Requirement for Unique Entity Identifier

If you are authorized to make subawards under this Federal award, you:

1. Must notify potential subrecipients that no entity (see definition in paragraph C of this award term) may receive a subaward from you until the entity has provided its Unique Entity Identifier to you.
2. May not make a subaward to an entity unless the entity has provided its Unique Entity Identifier to you. Subrecipients are not required to obtain an active SAM registration, but must obtain a Unique Entity Identifier.

C. Definitions

For purposes of this term:

1. System for Award Management (SAM) means the Federal repository into which a recipient must provide information required for the conduct of business as a recipient. Additional information about registration procedures may be found at the SAM internet site (currently at <https://www.sam.gov>).
2. Unique Entity Identifier means the identifier assigned by SAM to uniquely identify business entities.
3. Entity includes non-Federal entities as defined at [2 CFR 200.1](#) and also includes all of the following, for purposes of this part:
 - a. A foreign organization;
 - b. A foreign public entity;
 - c. A domestic for-profit organization; and
 - d. A Federal agency.
4. Subaward has the meaning given in [2 CFR 200.1](#).
5. Subrecipient has the meaning given in [2 CFR 200.1](#).

APPENDIX III: DAVIS-BACON AND RELATED ACTS REQUIREMENTS

1. Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act ([29 C.F.R. part 3](#))), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 C.F.R. . § 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in [§ 5.5\(a\)\(4\)](#). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under [paragraph \(a\)\(1\)\(ii\)](#) of 29 C.F.R. .§ 5.1 and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)

(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the

contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to [paragraphs \(a\)\(1\)\(ii\) \(B\) or \(C\)](#) of 29 C.F.R. . § 5.5, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding.

The Department of Treasury or recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, Treasury or the recipient may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under [29 C.F.R. 5.5\(a\)\(1\)\(iv\)](#) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy

of all payrolls to the recipient. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under [29 C.F.R. 5.5\(a\)\(3\)\(i\)](#), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the recipient, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of 29 C.F.R. § 5.5 for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under [§ 5.5 \(a\)\(3\)\(ii\)](#) of Regulations, [29 C.F.R. part 5](#), the appropriate information is being maintained under [§ 5.5 \(a\)\(3\)\(i\)](#) of Regulations, [29 C.F.R. part 5](#), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, [29 C.F.R. part 3](#);

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by [paragraph \(a\)\(3\)\(ii\)\(B\)](#) of this 29 C.F.R. . § 5.5.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under [paragraph \(a\)\(3\)\(i\)](#) of 29 C.F.R. § 5.5 available for inspection, copying, or transcription by authorized representatives of the recipient, Department of Treasury, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to [29 C.F.R. 5.12](#).

4. Apprentices and trainees -

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training

Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in [29 C.F.R. 5.16](#), trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 C.F.R. part 30](#).

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of [29 C.F.R. part 3](#), which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in [29](#)

[C.F.R. 5.5\(a\)\(1\)](#) through [\(10\)](#), and also a clause requiring the subcontractors to include these clauses in any lower-tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower-tier subcontractor with all the contract clauses in [29 C.F.R. 5.5](#).

7. Contract termination: debarment. A breach of the contract clauses in [29 C.F.R. 5.5](#) may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in [29 C.F.R. 5.12](#).

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in [29 C.F.R. parts 1, 3, and 5](#) are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in [29 C.F.R. parts 5, 6, and 7](#). Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or [29 C.F.R. 5.12\(a\)\(1\)](#).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or [29 C.F.R. 5.12\(a\)\(1\)](#).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, [18 U.S.C. 1001](#).

APPENDIX IV: CONTRACT CLAUSES REQUIRED FOR CONTRACTS SUBJECT TO THE REQUIREMENTS OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

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

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1 of 29 C.F.R. § 5.5(b), the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 of 29 C.F.R. § 5.5(b), in the sum of \$27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1 of 29 C.F.R. § 5.5(b).

(3) Withholding for unpaid wages and liquidated damages. The Department of Treasury or recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of 29 C.F.R. § 5.5(b).

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph 1 through 4 of 29 C.F.R. § 5.5(b) and also a clause requiring the subcontractors to include these clauses in any lower-tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor with the clauses set forth in paragraph 1 through 4 of 29 C.F.R. § 5.5(b).

APPENDIX V: 41 C.F.R. § 60-1.4

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

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

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

- 2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
- 3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
- 4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- 6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- 7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

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

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

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

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

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

TECHNICAL SPECIFICATIONS

Town Resaca Watershed Project

BPUB Bid #: B012-24

TCEQ Contract #: 582-20-11819

BROWNSVILLE, TX



TBPELS Engineering Firm #312

TEL (956) 303-0110

1075 Paredes Line Road, Suite B

Brownsville, TX 78521

AVO: 42947.001

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Section 01 10 00 – SUMMARY OF WORK

PART 1 GENERAL

1.1 PROJECT INTENT

- A. Remove and Replace 2 existing weirs as well as install 290 LF of Bulkhead, 108 LF of communication lines, 113 LF of PVC Conduit for the southern weir and 125 LF of communication lines, 201 LF of PVC Conduit for the northern weir. Install 12 Stormwater Treatment Units (Diameter Size Varies) and 2 Bypass Diversion Structures (Size Varies). Additionally, remove 12 LF portion from 15" RCP and replace with 12 LF of 12" DR-25 PVC and a 12" Gate Valve & Box centered on said pipe. This project also includes brick pavers, concrete sidewalk, landscaping, and other appurtenances.
- B. The existing and proposed facilities, dimensions and elevations shown on the plans are the Engineer's best information on the location of the existing and proposed utilities. Contractor shall verify the existing, and proposed facilities, locations, dimensions, angles, and alignments prior to ordering materials and/or initiation of work. Any variation in the planned quantities shall be transmitted to the Engineer for approval prior to commencing work.

1.2 WORK SEQUENCE

- A. General
 - 1. See Article 2 of the General Conditions regarding preliminary matters.
 - 2. Contractor is responsible for construction sequencing and shall prepare a project schedule in accordance with Section 01 33 00 – Submittal Procedures for approval by the Owner and Engineer prior to initiation of work.
- B. Survey
 - 1. The reference points and benchmark are shown on the construction plans. The Contractor must notify the engineer at least 48 hours prior to starting work on any sector or part of the work where controls have not been established or are not identifiable or visible to the Contractor. The Engineer will upon such advance notice, replace any control points that have been destroyed by others prior to beginning of the Contractor's operations. After control points are established and / or identified as outlined above, maintenance of such control points shall be the responsibility of the Contractor. Any re-staking required for any reason thereafter shall be the responsibility of the Contractor. The Contractor will provide all other construction staking (cut stakes, blue topping, intermediate string line control, etc.) Required to verify grades, depths, thickness, and alignment of the various items of construction. The Contractor shall provide BPUB with "cut-sheets" prior to approval for beginning construction projects. The "cut-sheets" will be used to verify pipe elevations.

2. Concurrent with performance of contract work, each Contractor shall prepare and maintain one neat and legible set of full-size contract drawings indicating “as-built” conditions, including but not limited to changes in type, location, length, or size, for any item of work. “As-built” drawing mark-ups shall be prepared at the time the applicable item of work is constructed or installed. The preparation of “as-built” drawings shall be as required by the Engineer and drawings shall be reviewed with the Engineer each month during construction. Prior to the final acceptance of contract work the Contractor shall submit to the Engineer one complete set of drawings showing all “as-built” work modifications.

C. TESTS AND INSPECTIONS

1. All materials, equipment, installation and workmanship included in this contract, if so, required by the Engineer, shall be tested and inspected to prove compliance with the contract requirements.
2. No tests specified herein shall be applied until the item to be tested has been inspected and approval given for the application of such test by an authorized representative of the manufacturer of the equipment.
3. Acceptance Tests and Inspection
 - a. The acceptance tests shall be at the Contractor’s expense for any materials or equipment specified herein. This is to include test of items during the process of manufacture and on completion of manufacture, comprising material test, hydraulic pressure tests, electric tests, performance and operating tests and inspections in accordance with the relevant standards of the industry, and more particularly as detailed in individual clauses of these specifications, or as may be required by the Engineer to satisfy himself that the items tested and inspected comply with the requirements of this contract.
 - b. All items delivered at the site shall be inspected in order that the Engineer may be satisfied that such items are of the specified quality and workmanship and are in good order and condition at the time of delivery.
4. Installed Tests and Inspection
 - a. All mechanical, electrical, and instrumentation equipment shall be tested by the Contractor installing the equipment to the satisfaction of the Engineer before any facility is put into operation. Tests shall be as specified herein and shall be made to determine whether the equipment has been properly assembled, aligned, adjusted, end connected. Any changes, adjustments or replacements required to make the equipment operate as specified shall be carried out by the Contractor as part of the work.

- b. At least 30 days before the time allowed in his construction schedule for commencing testing and start-up procedures, the Contractor shall submit to the Engineer, details of the procedures he proposes to adopt for testing and start-up of all mechanical, electrical and instrumentation equipment to be operated singly and together, except when such procedures have been covered in the specification
- c. During the testing of mechanical, electrical, and instrumentation equipment the contractor shall make available experienced factory trained representatives of the manufacturers of all the various pieces of equipment, or other qualified persons who shall instruct the Owner's personnel in the operation and care thereof. Instruction shall include step-by-step troubleshooting procedures with all necessary test equipment and a presentation to plant operating personnel.
- d. If under test, any portion of the work shall fail to fulfill the contract requirements and is altered, renewed, or replaced, tests on that portion when so altered, renewed or replaced, tests on that portion when so altered, removed or replaced, together with all other portions of the work as are affected thereby shall if so required by the Engineer, be repeated within reasonable time and in accordance with the specified conditions, and the Contractor shall refund to the Owner all reasonable expenses incurred by the Owner as a result of the carrying out of such tests.
- e. Where, in the case of an otherwise satisfactory installed test, any doubt, dispute or difference should arise between the Engineer and the Contractor regarding the test results or the methods of equipment used in the carrying out by the Contractor as such test, then the Engineer may order the test to be repeated. If the repeat test using such modified methods or equipment as the Engineer may require substantially conforms the previous test then all costs in connection with the repeat test will be paid by the Owner, otherwise the costs shall be borne by the Contractor. Where the results of any installed test fail to comply with the contract requirements for such test, the repeat tests as may be necessary to achieve the contract requirements shall be made by the Contractor at his own expense.

1.3 CONTRACTOR USE OF PREMISES

- A. The Contractor shall limit the use of the premises to construction activities in areas indicated in the design plans. The Contractor's responsibilities include:
 - 1. The Contractor shall confine operations to areas designated by the Owner and Engineer.
 - 2. Keep areas serving owner clear and available at all times. Do not use these areas for parking or storage of materials, except as approved. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
 - 3. The Contractor shall provide street sweeping equipment and perform, on a regular basis, street sweeping for construction debris on drives and parking lots along the haul route, construction site, and staging area. The Contractor shall also follow all TPDES Erosion Control Measures.

4. The Contractor is responsible for coordinating use of public/private areas with local authorities and private landowners.
5. The Contractor shall repair or replace, without delay, any and all damage to existing structures, surfaces, equipment, controls or systems resulting from his operations which are required to put the facility back in operation upon completion of the project.
6. The Contractor's attention is particularly directed to the dust, abrasive, particles, debris and dirt generated by the placement, chipping, cutting, finishing and grinding of new or existing concrete terrazzo and metal; and the fumes particulate matter, and splatter from welding, brazing and painting of new or existing piping and equipment; and provide filters, protective shielding, and other dust suppression methods at all times to adequately protect existing motors, pumps and electrical equipment.
7. Storage of Equipment: During the interval between the delivery of equipment to the site, and installation, all equipment shall be safely stored in a manner acceptable to the Owner. Equipment shall be stored in an enclosed space affording protection from weather; dust and mechanical damage, or loss, and providing favorable temperature, humidity, and ventilation conditions to ensure against equipment deterioration.
8. Protection of Equipment after Installation: After installation all equipment shall be protected against weather, dust, moisture and mechanical damage. During concrete operations, including finishing, all equipment that may be affected by cement must be completely covered. During painting operations, all grease fittings, nameplates and similar features, shall be covered to prevent the entry of paint.

1.4 COORDINATION WITH OCCUPANTS

- A. The Owner will occupy site and adjacent structures during the entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exists unless otherwise indicated.
 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without permission from the Owner and approval of authorities having jurisdiction.
 2. Notify Owner not less than 72-hours in advance of activities that will affect Owner's operations.

1.5 DEMOLITION

- A. Contractor will be required to completely remove all improvements (including manholes, piping, services, pavement, and other debris).
- B. The Contractor shall visit the site and fully acquaint himself with the existing conditions of the site.

1.6 CLEAN UP

- A. The Contractor shall not allow the site of the work to become littered with trash and waste material but shall maintain the site of the work in a neat and orderly condition throughout the construction period. The Contractor shall repair all pavement structures, utilities, and any other improvements damaged during construction on a like-for-like basis.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01 10 00

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SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Preliminary Construction Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Field condition reports.
 - 7. Special reports.

1.3 DEFINITIONS

- A. Definitions in this Article have been adapted from the glossary of terms in AGC's "Construction Planning & Scheduling." For many projects, most are unnecessary and may be deleted.
- B. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- C. Cost Loading: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by Architect.

-
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
 - E. Event: The starting or ending point of an activity.
 - F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
 - G. Fagnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
 - H. Major Area: A story of construction, a separate building, or a similar significant construction element.
 - I. Milestone: A key or critical point in time for reference or measurement.
 - J. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 SUBMITTALS

- A. Qualification Data: For scheduling consultant.
- B. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- C. Preliminary Construction Schedule: Submit two opaque copies.

-
1. Approval of cost-loaded preliminary construction schedule will not constitute approval of Schedule of Values for cost-loaded activities.
 - D. Preliminary Network Diagram: two opaque copies, large enough to show entire network for entire construction period. Show logic ties for activities.
 - E. Contractor's Construction Schedule: Submit two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
 1. Submit an electronic copy of schedule, using software indicated, on CD-R, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
 - F. Daily Construction Reports: Submit two copies at monthly intervals.
 - G. Material Location Reports: Submit two copies at monthly intervals.
 - H. Field Condition Reports: Submit two copies at time of discovery of differing conditions.
 - I. Special Reports: Submit two copies at time of unusual event.

1.5 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 1. Secure time commitments for performing critical elements of the Work from parties involved.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.

-
2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.
 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion.
 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than 21 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than 14 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.
 1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.

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3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
 7. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Structural completion.
 - b. Permanent space enclosure.
 - c. Completion of mechanical installation.
 - d. Completion of electrical installation.
 - e. Substantial Completion.
 - E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
 1. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned

- F. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for commencement of the Work.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for commencement of the Work. Base schedule on the Preliminary Construction Schedule and whatever updating, and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.5 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events (refer to special reports).

-
10. Stoppages, delays, shortages, and losses.
 11. Meter readings and similar recordings.
 12. Emergency procedures.
 13. Orders and requests of authorities having jurisdiction.
 14. Change Orders received and implemented.
 15. Construction Change Directives received and implemented.
 16. Services connected and disconnected.
 17. Equipment or system tests and startups.
 18. Partial Completions and occupancies.
 19. Substantial Completions authorized.
- B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.6 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Engineer, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 32 33 - CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.01.1 SECTION INCLUDES

- A. Photographic requirements for construction photographs and submittals.

1.02 SUBMITTALS

- A. Prints: Furnish 2 sets of 4-inch by 6-inch prints of each view and submit 1 print directly to the Engineer within 7 days of taking photographs. One print shall be retained by the Contractor in the field office at the Project site and available at all times for reference.
- B. Extra Prints: When requested by the Engineer, the Contractor shall submit extra prints of photographs, with distribution directly to designated parties who will pay the costs for the extra prints directly to the photographer.
- C. When required by individual sections, submit photographs taken prior to start of construction to show original site conditions.
- D. When required by Contract Documents, submit photographs with monthly Pay Estimate.
- E. Negatives: With each submittal, include photographic negatives, in protective envelopes, identified by Project name, Contractor, and date photographs were taken.
- F. In lieu of negatives, Contractor may submit electronic files of digital photographs if using a digital camera, but must comply with Parts 1 and 2 of this section.

1.03 QUALITY ASSURANCE

- A. Contractor shall be responsible for the timely execution of the photographs, their vantage point, and quality.
- B. Photographs: Two prints; color, matte finish; 4 x 6 -inch size, mounted on 8-1/2 x 11- inch soft card stock, with left edge binding margin for three hole punch. Digital photos shall not be distorted to fit card stock.

PART 2 PRODUCTS

2.01 PRECONSTRUCTION PHOTOGRAPHS

- A. Prior to the commencement of any construction, take 35 mm or digital color photographs of the site of the project and present two sets of prints to the Engineer for their use in contract administration and inspection. Subject matter of the photographs to be determined by the Engineer.
- B. The photographs shall show on a non-reflective chalkboard readable in the photograph:
 - 1. Job number.

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2. Date and time photographs were taken.
 3. Location and compass direction of the photograph, along with the project number.
 4. Date shall be on negative (35mm) or on digital image.
 5. Provide notation of vantage point marked for location and direction of shot, on a key plan of the site.
- C. Sufficient number of photographs shall be taken to show the existence or non-existence of cracked paved surfaces and the condition of trees, shrubs, and grass.
- D. Identify each photograph with an applied label or rubber stamp on the back with the following information:
1. Name of the Project.
 2. Name and address of the photographer (if a professional photographer is used).
 3. Name of the Contractor.
 4. Date the photograph was taken.
 5. Photographs shall be in plastic pockets and bound in three-ring notebook for easy access and viewing.

2.02 PROGRESS PHOTOGRAPHS

- A. Take photographs of subject matter selected by Resident Project Representative at intervals, coinciding with the cutoff date associated with each application for payment. Select the vantage points for each shot each month to best show the status of construction and progress since the last photographs were taken.
1. Vantage Points: Follow direction by the Resident Project Representative to select vantage points. During each of the following construction phases take not less than 2 of the required shots from the same vantage point each time to create a time-lapse sequence.
 2. Photos shall be submitted according to Paragraphs 1.03 B. and 2.01 B and D.

PART 3 EXECUTION - Not Used

END OF SECTION 01 32 33

Section 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures for:

1. Schedule of Values.
2. Construction Schedules.
3. Shop Drawings, Product Data, and Sampler.
4. Operations and Maintenance Data.
5. Manufacturer's Certificates.
6. Construction Photographs and Videos.
7. Project Record Documents.
8. Design Mixes.

1.2 SUBMITTAL PROCEDURES

A. Scheduling and Handling:

1. Schedule submittals well in advance of the need for the material or equipment for construction. Allow time to make delivery of material or equipment after submittal is approved.
2. Develop a submittal schedule that allows sufficient time for initial review, correction, resubmission and final review of all submittals. The Owner will review and return submittals to the Contractor as expeditiously as possible, but the amount of time required for review will vary depending on the complexity and quantity of data submitted. In no case will a submittal schedule be acceptable which allows less than 10 working days from the delivery of the submittal to the Engineer. Resubmittals shall be subject to the same review schedule. This time for submittal review, or resubmittals, shall in no way be justification for delays or additional compensation to the Contractor.
3. Submittal Format: Include the following information in each submittal:
 - a. Project name.
 - b. Date.
 - c. Name of Engineer.
 - d. Name of Construction Manager (if applicable).
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Sequentially number each submittal beginning with the number 1. Resubmittals shall use the original number with an alphabetic suffix (i.e., 2A for first resubmittal of Submittal 2 or 15C for third resubmittal of Submittal 15). Each submittal shall only contain one type of work, material, or equipment. Mixed submittals will not be accepted.
 - i. Category and type of submittal.

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- j. Submittal purpose and description.
 - k. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Indication of full or partial submittal.
 - n. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
 - o. Location(s) where product is to be installed, as appropriate.
 - p. Other necessary identification.
 - q. Remarks.
 - r. Signature of transmitter.
4. Contractor's Stamp
- a. Apply Contractor's stamp, certifying that the items have been reviewed in detail and are correct and in accordance with Contract Documents, except as noted by any requested variance.
 - b. As a minimum, Contractor's Stamp shall include:
 - 1) Contractor's name.
 - 2) Job number.
 - 3) Submittal number.
 - 4) Certification statement that the Contractor has reviewed the submittal and it is in compliance with the Contract Documents.
 - 5) Signature line for Contractor.
5. Paper Submittals:
- a. Place a permanent label or title block on each submittal coversheet item for identification; include name of firm or entity that prepared submittal.
 - b. Provide a 3" x 4" clear space on the coversheet to record the action taken by the Engineer.
 - c. Submit, to the Engineer, 4 copies of submittals unless otherwise specified in the following paragraphs or in the Specifications. Upon submittal review completion, the Engineer will provide the Owner and the Contractor with one paper submittal, with approval or review comments. The Engineer will retain one extra copy of the submittal, for the project folder.
 - d. Number and assemble each submittal individually as described in Section 1.02.3.h.
6. Electronic Submittals:
- a. Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with project name, date and submittal number.
 - b. E-Mail: Prepare submittals as PDF and transmit to Engineer by sending via e-mail with delivery confirmation return receipt. Include submittal identification information in email subject line. The Owner shall be carboned-copied on any emailed submittal, or resubmittal, made by the Contractor.

- c. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project Management software website as directed by the Project Manager. Enter required data in web-based software site to fully identify submittal.
7. The Engineer's review of submittals covers only general conformity to the Drawings, Specifications and dimensions which affect the layout. The Contractor is responsible for quantity determination. No quantities will be verified by the Owner or the Engineer. The Contractor is responsible for any errors, omissions or deviations from the Contract requirements; review of submittals in no way relieves the Contractor from his obligation to furnish required items according to the Drawings and Specifications.
8. The Contractor shall assume the risk for material or equipment which is fabricated or delivered prior to approval. No material or equipment shall be incorporated into the Work or included in periodic progress payments until approval has been obtained in the specified manner.

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 2. Submit schedule of values for bid schedule items identified as Lump Sum or items which may require work during multiple payment periods, or items as directed by the Engineer.
 3. Submit schedule of values to the Engineer at earliest possible date, but no later than 15 working days before the date scheduled for submittal of initial Application for Payment.
 4. All schedule of value items must be approved by the Owner and Engineer prior to the Contractor's Application for Payment for such item.
- B. Format and Content: Use Project Manual bid schedule as a guide to establish line items for the schedule of values. Provide at least two items for each bid item providing a schedule of value.
 1. Provide a breakdown of the bid item in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the bid item.
 2. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials, equipment or fabrications and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
 - b. Follow the contract documents for payment of material and equipment as it becomes incorporated into the Work.

3. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line item value of unit costs allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
4. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
5. Other Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
6. Mobilization: Provide a separate line item for mobilization, demobilization, bonding insurance and other project costs projected during the life of the project when such costs arise.
7. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Work Change Directive.
8. The Owner has the right to request documentation justifying the value provided by the Contractor in the schedule of values. The Owner retains the right to request additional unit price itemization in the schedule of values during the project.

1.4 CONSTRUCTION SCHEDULES

- A. Contractor's Construction Schedule: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules. Use Microsoft Project, Primavera or a program as directed by the Engineer for current Windows operating system.
 1. Include an updated construction schedule with each Application for Payment, or as directed by the Engineer. Issue updated schedule before each regularly scheduled progress meeting.
 2. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 3. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, duration, actual starts and finished, and activity durations.
 4. As the Work Progresses, indicate Final Completion percentage for each activity.
 5. Critical Path: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestones dates.
 6. Contract Modifications: Incorporate time-impact associated with each contract modification and prepare a time-impact analysis to demonstrate the effect of the proposed change on the Project Schedule.

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- B. Time Frame: Extend schedule from date established for the Notice to Proceed to the date of Substantial and Final Completion.
1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
 2. Prepare initial Construction Schedule with a float time approved by the Engineer. Distribute float time along the critical path based on the contractor's experience with each activity. Float time belongs to the Owner and can only be adjusted or distributed by the Owner.
- C. Activities: Treat each level or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 working days, unless specifically allowed by Engineer.
 2. Temporary Facilities: Indicate start and completion dates for the following as applicable:
 - a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Time for Owner provided items.
 - d. Coordination with Separate Contracts.
 - e. Regulatory Agency approvals.
 - f. Punch List and Correction Items.
 3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 calendar days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittal review, approvals, purchasing fabrication and delivery of materials and equipment needed for the Work.
 4. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, Subcontract awards, submittals, purchases, fabrication, sample testing, deliveries, installation, tests and inspections, adjusting, curing, and other project relates factors.
 5. Startup and Testing Time: Include no fewer than 15 calendar days for startup and testing, if applicable.
 6. Commissioning Time: Include no fewer than 15 calendar days for commissioning, if applicable.
 7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
 8. Punch List and Final Completion: Include not more than 30 or less than 20 calendar days for completion of punch list items and Final Completion.

- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents such as coordination with other construction by Owner or Others, limitations of continued occupancies, uninterruptible services, partial occupancy before substantial completion, use of premises restrictions, seasonal variations, environmental controls, or other constricts. Show how the sequence of Work is affected.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

1.5 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on standard sheets dimensions of 8-1/2 by 11 inches, 11 by 17 inches, or 24 by 36 inches.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment. In addition to the information below, include the required product data information as specified in the design plans or other specification sections.
 - 1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.

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3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.
- C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 3. Email Transmittal: Provide PDF transmittal including digital image file illustrating Sample characteristics, and identification information for record.
 4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based software website. Enter required data in web-based software site to fully identify submittal.
 5. Paper Transmittal: Include paper transmittal including complete submittal information indicated.
 6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

7. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.
8. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Engineer will retain two sample sets; remainder will be returned.
 - b. Submit a single sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - c. If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a sample, submit at least three sets of paired units that show approximate limits of variations.

1.6 OPERATIONS AND MAINTENANCE DATA

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
 1. Binders: Heavy-duty, three-ring, vinyl-covered, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

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- a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary, to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

C. SYSTEMS AND EQUIPMENT OPERATION MANUALS

1. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
 - a. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - b. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

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2. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - a. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - b. Performance and design criteria if Contractor has delegated design responsibility.
 - c. Operating standards.
 - d. Operating procedures.
 - e. Operating logs.
 - f. Wiring diagrams.
 - g. Control diagrams.
 - h. Piped system diagrams.
 - i. Precautions against improper use.
 - j. License requirements including inspection and renewal dates.
 3. Descriptions: Include the following:
 - a. Product name and model number. Use designations for products indicated on Contract Documents.
 - b. Manufacturer's name.
 - c. Equipment identification with serial number of each component.
 - d. Equipment function.
 - e. Operating characteristics.
 - f. Limiting conditions.
 - g. Performance curves.
 - h. Engineering data and tests.
 - i. Complete nomenclature and number of replacement parts.
 4. Operating Procedures: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Instructions on stopping.
 - f. Normal shutdown instructions.
 - g. Seasonal and weekend operating instructions.
 - h. Required sequences for electric or electronic systems.
 - i. Special operating instructions and procedures.
 5. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
 6. Piped Systems: Diagram piping as installed and identify color coding where required for identification.
- D. SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS**
1. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

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- a. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - b. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
2. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
 3. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
 4. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
 - a. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 - b. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - c. Identification and nomenclature of parts and components.
 - d. List of items recommended to be stocked as spare parts.
 5. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - a. Test and inspection instructions.
 - b. Troubleshooting guide.
 - c. Precautions against improper maintenance.
 - d. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - e. Aligning, adjusting, and checking instructions.
 - f. Demonstration and training video recording, if available.
 6. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - a. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

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- b. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
 7. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
 8. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
 9. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - a. Include procedures to follow and required notifications for warranty claims.
 10. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - a. Do not use original project record documents as part of maintenance manuals.

1.7 MANUFACTURER'S CERTIFICATE

- A. When specified in Specification sections, submit manufacturers' certificate of compliance for review by the Owner.
- B. Contractor's Stamp, as described in paragraph 1.2.A.4, shall be placed on front page of the certification.
- C. Submit supporting reference data, affidavits, and certifications as appropriate.
- D. Certificates may be recent or previous test results on material or product but must be acceptable to the Owner.

1.8 CONSTRUCTION PHOTOGRAPHS AND VIDEOS

- A. The Contractor shall be responsible for the production of pre-construction, during-construction (construction progress), post-construction and other documentation, as directed by the Engineer, videos and photographs.
 1. Digital Photographs: Submit image files within 7 days of taking photographs.
 - a. Submit photos on an electronic flash drive. Photographs shall be labeled as follows Project Abbreviation- Brief Location Description- Picture Number - date (MM-DD-YY). Use location description for similar type photos.

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- b. Include a tabled index of photographs, in digital PDF format, including the following:
 1. Name of Project
 2. Name and contact information of photographer
 3. Name of Engineer
 4. Name of Contractor
 5. Date photographs was taken
 6. Description of location, vantage point and direction
 7. Unique sequential identifier coordinating to the design plans.
 - c. Digital Photographs: Provide color images in JPG format, produced by a digital camera with a minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels, including vibration-reduction technology. Use flash in low light levels or backlit conditions.
 - d. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
 1. Field identify construction limits and stationing before taking construction photographs.
 2. Take adequate number of photographs to show existing conditions adjacent to property before starting the Work.
 3. Take adequate number of photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
 4. Take additional photographs as required to record existing damaged to adjacent structures, pavements, and improvements.
 5. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - a. Underground utilities.
 - b. Underslab services.
 - c. Piping.
 - d. Electrical conduit.
 - e. Waterproofing and weather-resistant barriers.
 - e. Periodic Construction Photographs: Take 20 photographs, or as directed by the Engineer, within one week of submittal of each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

-
- f. Final Completion Construction Photographs: Take adequate number of photographs after date of Substantial Completion and one-month following Final Acceptance of the Project for submission as part of the Project Record Documents.
 - g. Additional Photographs: The Engineer may request photographs in addition to periodic photographs specified. Additional requested photographs will not be considered for additional payment.
2. Video Recordings: Submit video recordings within 7 days of recording.
 - a. Submit video recordings on an electronic flash drive. Videos shall be labeled as follows Project Abbreviation- Brief Video Description- Picture Number - date (MM-DD-YY).
 - b. Identification: Include a tabled index of videos, in digital PDF format, including the following:
 1. Name of Project
 2. Name and contact information of photographer
 3. Name of Engineer
 4. Name of Contractor
 5. Date video was recorded
 6. Description of vantage point, indicating location, direction (by compass point), and elevation.
 7. Unique sequential identifier coordinating to the design plans.
 - c. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with a minimum sensor size of 12 megapixels, and capable of recording in full high-definition model with vibration-reduction technology. Provide supplemental lighting in low light levels or backlit conditions.
 - d. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation of construction.
 1. Confirm date and time at beginning and end of recording.
 2. Begin each video recording with name or Project, date and time, Contractor's name, videographer's name, and Project location.
 - e. Preconstruction Video Recording: Before starting construction, record video recording of Project site and surrounding properties from different vantage points. Minimum recording time shall be 30 minutes(s).
 1. Field identify construction limits and stationing before recording construction video recordings.
 2. Show existing conditions adjacent to Project site before starting the Work.
 3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of construction.

- f. Periodic Construction Video Recordings: Record video recording within one week of submittal of each Application for Payment. Select vantage points to show status of construction and progress since last video recordings were recorded.

1.9 PROJECT RECORD DOCUMENTS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Particular attention should be given to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Locations and depths of installed underground utilities.
 - d. Locations, depths and sizes of encountered underground utilities not shown.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Changes made by Change Order or Work Change Directive.
 - j. Changes made following Engineer's written orders.
 - k. Details not on the original Contract Drawings.
 - l. Field records for variable and concealed conditions.
 - m. Record information on the Work that is shown only schematically.
3. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Mark important additional information that was either shown schematically or omitted from original Drawings.
5. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

6. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets as follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Engineer.
 - e. Name of Contractor.
7. Format: Provide Engineer with digital copy in PDF electronic format, with full comment enabled function, on a flash drive.
8. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
9. Record Prints and Digital Data Files shall be clean, legible and clearly show the Engineer the accurate depictions of the constructed improvements. For a minimum period of 6 months after substantial completion, the Contractor shall be available to answer any questions and clarify any items the Engineer may have regarding the provided Record Data.

1.10 DESIGN MIXES

- A. When specified in Specifications, submit design mixes for review.
- B. Contractor's Stamp, as described in paragraph 1.2.A.4, shall be placed on front page of each design mix.
- C. Mark each design mix to identify proportions, gradations, and additives for each class and type of design mix submitted. Include applicable test results on samples for each mix.
- D. Maintain a copy of approved design mixes at mixing plant.

PART 2 - PRODUCTS - [Not Used]

PART 3 - EXECUTION – [Not Used]

END OF SECTION

Section 01 45 29 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Testing laboratory services and Contractor responsibilities related to those services.

1.2 REFERENCES

- A. ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- B. ASTM D 3666 - Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials.
- C. ASTM D 3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- D. ASTM E 329 - Specification for Minimum Requirements for Agencies Engaged the Testing and/or Inspection of Materials Used in Construction.
- E. ISO/TEC Guide 25 - General Requirements for the Competence of Calibration and Testing Laboratories.

1.3 SELECTION AND PAYMENT

- A. The Owner will select, employ, and pay for services of an independent testing laboratory to perform inspection and testing as required.
- B. When required, the Contractor shall employ and pay for services of an independent testing laboratory or laboratories to perform inspection and testing identified in "Products" sections of the individual Specification.
- C. Employment of a testing laboratory by the Owner shall not relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.
- D. The Contractor will have the cost of retesting deducted from the estimate for payment whenever failed work must be removed and replaced and retested.

1.4 QUALIFICATION OF LABORATORY

- A. Meet laboratory requirements of ASTM E 329 and applicable requirements of ASTM C 1077, ASTM D 3666, and ASTM D 3740.
- B. Meet the ISO/TEC Guide 25 conditions for accreditation by the American Association for Laboratory Accreditation (A2LA) in specific fields of testing required in individual Specification sections.

- C. Where a laboratory subcontracts any part of the testing services, such work shall be placed with a laboratory complying with the requirements of this Section.

1.5 LABORATORY REPORTS

- A. The testing laboratory shall provide and distribute copies of laboratory reports to the following: Owner(s), Engineer, and Contractor. Other copies of the reports may be required to be submitted to other parties. The testing laboratory will be informed of any other persons that required laboratory reports.
- B. One copy of each laboratory report distributed or emailed to the Contractor shall be kept at the site field office for the duration of the project.
- C. Before close of business on the working day following test completion and review, reports which indicate failing test results shall be transmitted immediately via email from the testing laboratory to the Owner, Contractor, and Engineer.

1.6 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume any duties of the Contractor.
- D. Laboratory has no authority to stop the Work unless a safety risk is imminent. The laboratory's representative shall immediately inform the Engineer and the Owner of any conflicts with the Contractor or Contractor's construction methods.

1.7 CONTRACTOR RESPONSIBILITIES

- A. Provide safe access to the Work and to applicable facilities (e.g. manufacturers, suppliers) for the Owner, Engineer, and testing laboratory personnel.
- B. Provide to the testing laboratory a copy of the construction schedule and a copy of each update to the construction schedule.
- C. Notify the Engineer and the testing laboratory during normal working hours of the day previous, but not less than 18 hours prior notice, to the expected time for operations requiring inspection and testing services. If the Contractor fails to make timely prior notification, then the Contractor shall not proceed with the operations requiring inspection and testing services.
- D. Notify the Engineer 24 hours in advance if the Specification requires the presence of the Engineer for sampling or testing.
- E. Request and monitor testing as required to provide timely results and to avoid delay to the Work. Provide samples to the laboratory in sufficient time to allow the required test to be performed in accordance with specified test methods before the intended use of the material.

- F. Cooperate with laboratory personnel in collecting samples on site. Provide incidental labor and facilities for safe access to the Work to be tested; to obtain and handle samples at the site or at source of products to be tested; and to facilitate tests and inspections including storage and curing of test samples.

PART 2 - PRODUCTS – [Not Used]

PART 3 - EXECUTION

3.1 CONDUCTING TESTING

- A. Laboratory sampling and testing specified in individual Specification sections shall conform to the latest issues of ASTM standards, TxDOT methods, or other recognized test standards as approved by the Engineer.
- B. The requirements of this section shall also apply to those tests for approval of materials, for mix designs, and for quality control of materials as performed by the testing laboratories employed by the Contractor.

END OF SECTION

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Section 01 55 26 - TRAFFIC CONTROL AND REGULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Requirements for signs, signals, control devices, flares, lights and traffic signals, as well as construction parking control, designated haul routes and bridging of trenches and excavations.
- B. Requirement for and qualifications of flagmen.

1.2 UNIT PRICES

A. Unit Prices

- 1. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring traffic control and regulation.

1.3 SUBMITTALS

- B. The contractor shall submit for approval by the Owner and prior to the beginning of work a Traffic Control Plan responsive to the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and sealed by a Registered Professional Engineer.
- C. For both the traffic control plan and flagmen use, submit schedules of values in accordance with Section 01 33 00 - Submittal Procedures.
- D. Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

PART 2 - PRODUCTS

2.1 SIGNS, SIGNALS, AND DEVICES

- A. Comply with Texas State Manual on Uniform Traffic Control Devices.
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

PART 3 - EXECUTION

3.1 PUBLIC ROADS

- A. Abide by laws and regulations of governing authorities when using public roads. If the Contractor's work requires that public roads be temporarily impeded or closed, approvals shall be obtained from governing authorities and permits paid for before starting any work. Coordinate activities with the Owner.
- B. Contractor shall always maintain a 10-foot-wide all-weather lane adjacent to work areas which shall be kept free of construction equipment and debris and shall be for the use of emergency vehicles, or as otherwise provided in the traffic control plan.
- C. Contractor shall not obstruct the normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by the Owner.
- D. Contractor shall maintain local driveway access to residential and commercial properties adjacent to work areas at all times.
- E. Cleanliness of Surrounding Streets: Keep streets used for entering or leaving the job area free of excavated material, debris, and any foreign material resulting from construction operations.

3.2 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.3 FLARES AND LIGHTS

- A. Provide flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.4 HAUL ROUTES

- A. Utilize haul routes designated by authorities or shown on the Drawings for construction traffic.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

3.5 TRAFFIC SIGNS AND SIGNALS

- A. Install traffic control devices at approaches to the site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
- C. Relocate traffic signs and signals as Work progresses to maintain effective traffic control.

3.6 BRIDGING TRENCHES AND EXCAVATIONS

- A. Whenever necessary, bridge trenches and excavation to permit an unobstructed flow of traffic.
- B. Vehicle crossings must be designed by and installed under the supervision of a registered professional engineer.
- C. Secure bridging against displacement by using adjustable cleats, angles, bolts or other devices whenever bridge is installed:
 - 1. On an existing bus route;
 - 2. When more than five percent of daily traffic is comprised of commercial or truck traffic;
 - 3. When more than two separate plates are used for the bridge; or
 - 4. When bridge is to be used for more than five consecutive days.
- D. Install bridging to operate with minimum noise.
- E. Adequately shore the trench or excavation to support bridge and traffic.
- F. Extend steel plates used for bridging a minimum of two foot beyond edges of stable trench walls or excavation. Use temporary paving materials (premix) to feather edges of plates to minimize wheel impact on secured bridging.
- G. Steel plates shall support H-20 loaded truck or loadings that produces maximum stress.

3.7 REMOVAL

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.
- C. Remove post settings to a depth of 2 feet.

END OF SECTION

Section 01 57 13 - TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Description of erosion and sediment control and other control-related practices, which shall be utilized during construction activities.

1.2 UNIT PRICES

- A. Payment for this item shall be made on a lump sum basis for the maintenance of the temporary erosion and sediment control and other TPDES requirements. The costs associated with TPDES inspection and reporting shall also be included in this item.

1.3 RESPONSIBILITY

- A. It is the contractor's responsibility to acquire a Texas Pollutant Discharge Elimination System (TPDES) Permit as indicated in Section 01 57 23 TPDES Requirements (SWPPP provided by Contractor).
- B. All work performed under this section must be as per construction plans and TPDES approved Permit.

PART 2 - PRODUCTS - [Not Used]

PART 3 - EXECUTION

3.1 PREPARATION AND INSTALLATION

- A. No clearing and grubbing or rough cutting shall be permitted until erosion and sediment control systems are in place, other than site work specifically directed by the Owner's Representative to allow soil testing and surveying.
- B. Equipment and vehicles shall be prohibited by the Contractor from maneuvering on areas outside of dedicated rights-of-way and easements for construction. Damage caused by construction traffic to erosion and sediment control systems shall be repaired immediately by the Contractor.
- C. The Contractor shall be responsible for collecting, storing, hauling, and disposing of spoil, silt, and waste materials as specified in this or other Specifications and in compliance with applicable federal, state, and local rules and regulations.
- D. Contractor shall conduct all construction operations under this Contract in conformance with the erosion control practices described in the SWPPP, Drawings, and this Specification.

-
- E. The Contractor shall install, maintain, and inspect erosion/sediment control measures and practices as specified in the SWPPP, TPDES Permit, Drawings, and in this or other Specifications.

3.2 TOPSOIL PLACEMENT FOR EROSION AND SEDIMENT CONTROL SYSTEMS

- A. When topsoil is specified as a component of another Specification, the Contractor shall conduct erosion control practices described in this Specification during topsoil placement operations.
 - 1. When placing topsoil, maintain erosion and sediment control systems, such as swales, grade stabilization structures, berm, dikes, waterways, and sediment basins.
 - 2. Maintain grades which have been previously established on areas to receive topsoil.
 - 3. After the areas to receive topsoil have been brought to grade, immediately prior to dumping and spreading the topsoil, loosen the sub grade by disking or by scarifying to a depth of at least 2 inches to permit bonding of the topsoil to the subsoil.
 - 4. No sod or seed shall be placed on soil which has been treated with soil sterility until sufficient time has elapsed to permit dissipation of toxic materials.

3.3 SEDIMENT CONTROL MAINTENANCE

- A. All erosion, sediment, and water pollution controls will be maintained in good working order. A rain gauge provided by the Contractor shall be located on the project site. Within 24 hours of a rainfall event of 0.5 inches or more as measured by the project rain gauge, the Contractor and the Owner's Representative shall inspect the entire project to determine the condition of the control measures. Sediment shall be removed and devices repaired as soon as practicable but no later than 7 days after the surrounding ground has dried sufficiently to prevent further damage from equipment operations needed for repairs.
- B. In the event of continuous rainfall over a 24 hour period, or other circumstances that preclude equipment operation in the area, the Contractor shall install additional backup storm water pollution control devices, as determined by the Owner's Representative, by other appropriate methods. The Contractor shall remove sediment accumulations and deposit the spoils in an area approved by the Owner's Representative as soon as practical and in accordance with the SWPPP. Any corrective action needed for the control measures is to be accomplished in the sequence directed by the Owner's Representative; however, areas adjacent to receiving waters shall generally have priority, followed by devices protecting storm sewer inlets.

3.4 DUST CONTROL

- A. Implement dust control methods to control dust creation and movement on construction sites and roads and to prevent airborne sediment from reaching receiving streams or storm water conveyance systems, to reduce on-site and off-site damage, to prevent health hazards, and to improve traffic safety.
- B. Control blowing dust by using one or more of the following methods:
 - 1. Mulches bound with chemical binders.
 - 2. Temporary vegetative cover.
 - 3. Spray-on adhesives on mineral soils when not used by traffic.
 - 4. Tillage to roughen surface and bring clods to the surface.
 - 5. Irrigation by water sprinkling.
 - 6. Barriers using solid board fences, snow fences, burlap fences, crate walls, bales of straw, or similar materials.
- C. Implement dust control methods immediately whenever dust can be observed blowing on the project site.

3.5 OFFSITE ROADWAY MAINTENANCE

- A. Keep streets clean of construction debris and mud carried by construction vehicles and equipment. If necessary to keep the streets clean, install stabilized construction exits at construction, staging, storage, and disposal areas. A vehicle/equipment wash area (stabilized with coarse aggregate) may be installed adjacent to the stabilized construction exit, as needed. Release wash water into a drainage swale or inlet protected by erosion and sediment control measures. Construction exit and wash areas are shown in the construction plan Details, as Stabilized Construction Exit Detail.
- B. In addition to stabilized construction exits, shovel or sweep the pavement to the extent necessary to keep the street clean. Water hosing or sweeping of debris and mud off of the street into adjacent areas is not allowed.

3.6 EQUIPMENT MAINTENANCE AND REPAIR

- A. Confine maintenance and repair of construction machinery and equipment to areas specifically designated for that purpose. Locate such areas so that oils, gasoline, grease, solvents, and other potential pollutants cannot be washed directly into receiving streams or storm water conveyance systems. Provide these areas with adequate waste disposal receptacles for liquid as well as solid waste. Clean and inspect maintenance areas daily.

- B. On a construction site where designated equipment maintenance areas are not feasible, take precautions during each individual repair or maintenance operation to prevent potential pollutants from washing into streams or conveyance systems. Provide temporary waste disposal receptacles.

3.7 WASTE COLLECTION AND DISPOSAL

- A. Contractor shall formulate and implement a plan for the collection and disposal of waste materials on the construction site. In plan, designate locations for trash and waste receptacles and establish a collection schedule. Methods for ultimate disposal of waste shall be specified and carried out in accordance with applicable local, state, and federal health and safety regulations. Make special provisions for the collection and disposal of liquid wastes and toxic or hazardous materials.
- B. Keep receptacles and waste collection areas neat and orderly to the extent possible. Waste shall not be allowed to overflow its container or accumulate from day-to-day. Locate trash collection points where they will least likely be affected by concentrated storm water runoff.

3.8 WASHING AREAS

- A. Vehicles such as concrete delivery trucks or dump trucks and other construction equipment shall not be washed at locations where the runoff will flow directly into a watercourse or storm water conveyance system. Designate special areas for washing vehicles. Locate these areas where the wash water will spread out and evaporate or infiltrate directly into the ground, or where the runoff can be collected in a temporary holding or seepage basin. Beneath wash areas construct a gravel or rock base to minimize mud production.

3.9 STORAGE OF CONSTRUCTION MATERIALS AND CHEMICALS

- A. Isolate sites where chemicals, cements, solvents, paints, or other potential water pollutants are stored in areas where they will not cause runoff pollution.
- B. Store toxic chemicals and materials, such as pesticides, paints, and acids in accordance with manufacturers' guidelines. Protect groundwater resources from leaching by placing a plastic mat, packed clay, tar paper, or other impervious materials on any areas where toxic liquids are to be opened and stored.

3.10 DEMOLITION AREAS

- A. Demolition activities which create large amounts of dust with significant concentrations of heavy metals or other toxic pollutants shall use dust control techniques to limit transport of airborne pollutants. However, water or slurry used to control dust contaminated with heavy metals or toxic pollutants shall be retained on the site and shall not be allowed to run directly into watercourses or storm water conveyance systems. Methods of ultimate disposal of these materials shall be carried out in accordance with applicable local, state, and federal health and safety regulations.

3.11 SANITARY FACILITIES

- A. Provide and maintain sanitary facilities for persons on the job site; comply with the regulations of State and local departments of health.
- B. Enforce the use of sanitary facilities by construction personnel at the job site. Such facilities shall be enclosed. Pit-type toilets will not be permitted. No discharge will be allowed from these facilities. Collect and store sewage and waste so as not to cause a nuisance or health problem; have sewer and waste hauled off-site and properly disposed in accordance with local regulations.
- C. Located toilets near the Work site and secluded from view insofar as possible. Keep toilets clean and supplied throughout the course of the Work.

3.12 PESTICIDES

- A. Use and store pesticides during construction in accordance with manufacturers' guidelines and with local, state, and federal regulations. Avoid overuse of pesticides which could produce contaminated runoff. Take great care to prevent accidental spillage. Never wash pesticide containers in or near flowing streams or storm water conveyance systems.

END OF SECTION

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Section 01 57 23 - TPDES REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section describes the required documentation to be prepared and signed by the Contractor before conducting construction operations, in accordance with the terms and conditions of the TCEQ GENERAL PERMIT TO DISCHARGE WASTE, under provisions of Section 402 of the Clean Water Act and Chapter of the Texas Water Code.
- B. The Contractor shall be responsible for the submittal of a Storm Water Pollution Prevention Plan (SWPPP) that supplements the information provided in the design plans. The SWPPP information provided in the design plans DOES NOT meet the requirements set forth in the TCEQ General Permit. This information and details are only for informational purposes only. The Contractor shall be responsible for obtaining a TCEQ approved SWPPP plan and Notice of Intent. All costs, control measures, BMP's and permitting fees associated with the SWPPP shall be covered by the bid item titled "Storm Water Pollution Prevention & Erosion Control Plan".
- C. The Contractor's will be responsible for all damages caused by the failure to implement the SWPPP. The Contractor will be responsible for all costs associated with remediation of damages caused by failure to implement the SWPPP. The Contractor shall be responsible for implementation, maintenance, and inspection of storm water pollution prevention control measures including, but not limited to, erosion and sediment controls, storm water management plans, waste collection and disposal, off-site vehicle tracking, and other practices included in the SWPPP or specified elsewhere in this or other Specifications.
- D. Contractor shall review implementation of the SWPPP in a meeting with the Owner prior to start of construction.

1.02 REFERENCES

- A. ASTM D3786 - Standard Test Method for Hydraulic Bursting Strength for Knitted Goods and Nonwoven Fabrics
- B. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

PART 2 PRODUCTS - [Not Used]

PART 3 EXECUTION

3.01 NOTICE OF INTENT

- A. The Contractor shall fill out, sign, and date the Contractor's Notice of Intent (NOI) attached at the end of this Section. The signed copy of the Contractor's NOI shall be returned to the Owner. The Owner will complete the Owner's Notice of Intent attached and will submit both notices to the TCEQ.

3.02 CERTIFICATION REQUIREMENTS

- A. On the Operator's Information form attached, the Contractor shall fill out name, address, and telephone number for the Contractor; the names of persons or firms responsible for maintenance and inspection of erosion and sediment control measures and all Subcontractors.
- B. The Contractor will forward the completed form for the Owner to complete and sign the Owner's Certification and return a copy to the Contractor for inclusion with other project certification forms.
- C. The Contractor and Subcontractors named in the Operator's Information form shall read, sign, and date the Contractor's/Subcontractor's Certification form.
- D. The persons or firms responsible for maintenance and inspection of erosion and sediment control measures shall read, sign, and date the Contractor's Inspection and Maintenance Certification form.
- E. The Operator's Information form and all certification forms shall be submitted to the Owner before beginning construction.

3.03 RETENTION OF RECORDS

- A. The Contractor shall keep a copy of the Storm Water Pollution Prevention Plan at the construction site or at the Contractor's office from the date that it became effective to the date of project completion.
- B. At project closeout, the Contractor shall submit to the Owner all TPDES forms and certifications, as well as a copy of the SWPPP. Storm water pollution prevention records and data will be retained by Owner for a period of 3 years from the date of project completion.

3.04 REQUIRED NOTICES

- A. The following notices shall be posted from the date that this SWPPP goes into effect until the date of final site stabilization:
 - 1. Copies of the Notices of Intent submitted by the Contractor shall be posted at the construction site or at Contractor's office in a prominent place for public viewing.

2. Notice to drivers of equipment and vehicles, instructing them to stop, check, and clean tires of debris and mud before driving onto traffic lanes. Post such notices at every stabilized construction exit area.
3. In an easily visible location on site, post a notice of waste disposal procedures.
4. Notice of hazardous material handling and emergency procedures shall be posted with the NOI on site. Keep copies of Material Safety Data Sheets at a location on site that is known to all personnel.
5. Keep a copy of each signed certification at the construction site or at Contractor's office.

END OF SECTION

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SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

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1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
 4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 5. Engineer's Action: Engineer will respond in writing to Contractor within 15 days of receipt of completed product list. Engineer's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Engineer's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.
- B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Use Contractor's standard form.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.

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- f. List of similar installations for completed projects with project names and addresses and names and addresses of Owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
- a. Form of Acceptance: Change Order.
 - b. Use product specified if Engineer cannot make a decision on use of a proposed substitution within time allocated.
- C. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
- D. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Engineer will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Engineer's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
 7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
 3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
 4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product match.
 - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, and textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Engineer will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Engineer will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Engineer will consider requests for substitution if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Engineer
- B. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

- A. Conditions: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

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Section 02 21 13 - FIELD SURVEYING

PART 1 - GENERAL

1.1 QUALITY CONTROL

- A. Conform to State of Texas laws for surveys requiring licensed surveyors.

1.2 UNIT PRICES

- A. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring surveying.

1.3 SUBMITTALS

- A. Submit documentation verifying accuracy of survey work upon request.
- B. Submit certificate signed by surveyor, that the elevations and locations of the Work are in conformance with Contract Documents.
- C. Submit information under provisions of Section 01 33 00 - Submittal Procedures.

1.4 PROJECT RECORD DOCUMENTS

- A. Maintain a complete and accurate log of control and survey work as it progresses.
- B. Prepare a certified survey setting forth dimensions, locations, angles, and elevations of construction and site work upon completion of foundation walls and major site improvements.
- C. Submit Project Record Documents under provisions of Section 01 33 00 - Submittal Procedures.

1.5 EXAMINATION

- A. Verify locations of survey control points prior to starting Work.
- B. Notify Engineer immediately of any discrepancies discovered.

1.6 SURVEY REFERENCE POINTS

- A. Control datum for survey is that established by Owner-provided survey as indicated on Drawings.

- B. Locate and protect survey control points prior to starting site work; preserve permanent reference points during construction.
- C. Notify Engineer 48 hours in advance of need for relocation of reference points due to changes in grades or other reasons.
- D. Report promptly to Engineer the loss or destruction of any reference point.
- E. Contractor shall reimburse Owner for cost of reestablishment of permanent reference points disturbed by Contractor's operations.

1.7 SURVEY REQUIREMENTS

- A. Utilize recognized engineering survey practices.
- B. Establish elevations, lines and levels to provide appropriate controls for the Work. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading; fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
- C. Verify periodically layouts by same means.

PART 2 - PRODUCTS – [Not Used]

PART 3 - EXECUTION – [Not Used]

END OF SECTION

Section 02 41 13.13 - REMOVING EXISTING PAVEMENTS AND STRUCTURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Removing concrete paving, asphaltic concrete pavement and base courses.
- B. Removing concrete curbs, concrete curbs and gutters, sidewalks and driveways.
- C. Removing pipe culverts and sewers.
- D. Removing existing inlets and manholes.
- E. Removing miscellaneous structures of concrete or masonry.

1.2 UNIT PRICES

- A. Unit Prices.
 - 1. Payment for removing and disposing of asphaltic surfacing and of base under asphaltic surfacing, regardless of the thickness encountered, is on a square yard basis measured between lips of gutters.
 - 2. Payment for removing and disposing of base under surfacing with curbs, regardless of the thickness encountered, is on a square yard basis measured from back-to-back of curbs.
 - 3. Payment for removing and disposing of reinforced concrete pavement, regardless of its thickness, is on a square foot basis.
 - 4. Payment for removing and disposing of monolithic curbs and gutters, and concrete curbs, is on a linear foot basis measured along the back of the curb.
 - 5. Payment for removing and disposing of cement stabilized base course, with or without asphaltic surfacing, is on a square yard basis.
 - 6. Payment for removing and disposing of concrete sidewalks and driveways is on a square foot basis.
 - 7. Payment for removing and disposing of miscellaneous concrete and masonry is on a unit price basis for each structure removed.
 - 8. Payment for removing and disposing of pipe culverts and sewers is on a linear foot basis for each diameter and each material type of pipe removed.
 - 9. Payment for removing and disposing of existing inlets is on a unit price basis for each inlet removed.

10. Payment for removing and disposing of existing manholes is on a unit price basis for each manhole removed.

11. No separate payment will be made for saw cutting of pavement, concrete, driveways, sidewalks, or curbs and gutters, or other items required for removal items under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring saw cutting.

12. No payment will be made for work outside project limits, or for pavements or structures removed for the Contractor's convenience.

1.3 REGULATORY REQUIREMENTS

A. Conform to applicable codes for disposal of debris.

B. Coordinate removal work with utility companies.

PART 2 - PRODUCTS – [NOT USED]

PART 3 - EXECUTION

3.1 PREPARATION

A. Obtain advance approval from the Owner's representative for dimensions and limits of removal work.

B. Identify known utilities below grade. Stake and flag locations.

3.2 PROTECTION

A. Protect the following from damage or displacement:

1. Adjacent public and private property.
2. Trees, plants, and other landscape features designated to remain.
3. Utilities designated to remain.
4. Pavement and utility structures designated to remain.
5. Benchmarks, monuments, and existing structures designated to remain.

3.3 REMOVALS

A. Remove pavements and structures by methods that will not damage underground utilities. Do not use a drop hammer near existing underground utilities.

- B. Minimize amount of earth loaded during removal operations.
- C. Where existing pavement is to remain, make straight saw cuts in existing pavement to provide clean breaks prior to removal. Do not break concrete pavement or base with drop hammer unless concrete or base has been saw cut to a minimum depth of 2 inches.
- D. Where street and driveway saw cut, locations coincide or fall within 3 feet of existing construction or expansion joints, remove concrete to nearest existing joint.
- E. Remove sidewalks and curbs to nearest existing dummy, expansion, or construction joint.
- F. Where existing end of pipe culvert or end of sewer is to remain, install an 8-inch-thick concrete plug in pipe end prior to backfill.

3.4 BACKFILL

- A. Backfill of removal areas shall be in accordance with requirements of Section 31 23 16.16 - Excavation and Backfill for Minor Structures.

3.5 DISPOSAL

- A. Inlet frames, grates, and plates; and manhole frames and covers, may remain Owner's property. Disposal shall be in accordance with local and state laws and the responsibility of the Contractor.
- B. Remove from the site debris resulting from work under this section in accordance with local and state laws and the responsibility of the Contractor.

END OF SECTION

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Section 31 06 20.16 - UTILITY BACKFILL MATERIALS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Material Classifications.

B. Utility Backfill Materials:

1. Concrete sand
2. Gem sand
3. Pea gravel
4. Crushed Aggregate: Crushed stone
5. Crushed Aggregate: Crushed concrete
6. Bank run sand
7. Select backfill
8. Random backfill

C. Material Handling and Quality Control Requirements.

1.2 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No payment will be made for backfill material under this Section. Include payment in unit price for applicable utility installation.

1.3 DEFINITIONS

A. Unsuitable Material: Unsuitable soil materials are the following:

1. Materials that are classified as ML, CL-ML, MH, PT, OH, and OL according to ASTM D 2487.
2. Materials that cannot be compacted to the required density because of either gradation, plasticity, or moisture content.
3. Materials that contain large clods, aggregate, and stones greater than 4 inches in any dimension; debris, vegetation, and waste; or any other deleterious materials.
4. Materials that are contaminated with hydrocarbons or other chemical contaminants.

B. Suitable Material: Suitable soil materials are the following:

1. Those meeting this specification requirements.

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2. Unsuitable soils meeting specification requirements for suitable soils after treatment with lime or cement.
 - C. Foundation Backfill Materials: Natural soil or manufactured aggregate meeting Class I requirements and geotextile filter fabrics as required, to control drainage and material separation. Foundation backfill material is placed and compacted as backfill where needed to provide stable support for the structure foundation base. Foundation backfill materials may include concrete fill and seal slabs.
 - D. Foundation Base: Crushed stone aggregate with filter fabric as required, cement stabilized sand, or concrete seal slab. The foundation base provides a smooth, level working surface for the construction of the concrete foundation.
 - E. Backfill Material: Classified soil material meeting specified quality requirements for the designated application as embedment or trench zone backfill.
 - F. Embedment Material: Soil material placed under controlled conditions within the embedment zone extending vertically upward from top of foundation to an elevation 12 inches above top of pipe, and including pipe bedding, haunching, and initial backfill.
 - G. Trench Zone Backfill: Classified soil material meeting specified quality requirements and placed under controlled conditions in the trench zone from top of embedment zone to base coarse in paved areas or to the surface grading material in unpaved areas.
 - H. Foundation: Either suitable soil of the trench bottom, or material placed as backfill of over-excavation for removal and replacement of unsuitable or otherwise unstable soils.
 - I. Source: A source selected by the Contractor for supply of embedment or trench zone backfill material. A selected source may be the project excavation, off-site borrow pits, commercial borrow pits, or sand and aggregate production or manufacturing plants.
 - J. Refer to Section 31 23 16.16 - Excavation and Backfill for Utilities for other definitions regarding utility installation by trench construction.

1.4 REFERENCES

- A. ASTM C 33 - Specification for Concrete Aggregate.
- B. ASTM C 40 - Test Method for Organic Impurities in Fine Aggregates for Concrete.
- C. ASTM C 123 - Test Method for Lightweight Pieces in Aggregate.
- D. ASTM C 131 - Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- E. ASTM C 136 - Test Method for Sieve Analysis of Fine and Coarse Aggregates.

- F. ASTM C 142 - Test Method for Clay Lumps and Friable Particles in Aggregates.
- G. ASTM D 1140 - Test Method for Amount of Materials in Soils Finer Than No. 200 Sieve.
- H. ASTM D 2487 - Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- I. ASTM D 2488 - Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).
- J. ASTM D 4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- K. ASTM D 4643 - Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method.
- L. TxDOT Tex-101-E - Preparation of Soil and Flexible Base Materials for Testing.
- M. TxDOT Tex-104-E - Test Method for Determination of Liquid Limit of Soils (Part 1)
- N. TxDOT Tex-106-E - Test Method - Methods of Calculating Plasticity Index of Soils.
- O. TxDOT Tex-110-E - Determination of Particle Size Analysis of Soils.

1.5 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 - Submittal Procedures.
- B. Submit a description of source, material classification and product description, production method, and application of backfill materials.
- C. Submit test results for samples of off-site backfill materials to comply with Paragraph 2.3, Materials Testing.
- D. Before stockpiling materials, submit a copy of temporary easement or approval from landowner for stockpiling backfill material on private property.
- E. For each delivery of material, provide a delivery ticket which includes source location.

1.6 TESTS

- A. Perform tests of sources for backfill material in accordance with Paragraph 2.3.
- B. Verification tests of backfill materials may be performed by the Owner in accordance with Section 01 45 29 - Testing Laboratory Services and in accordance with Paragraph 3.3.

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- C. Random fill obtained from the project excavation as source is exempt from pre-qualification requirements by Contractor but must be inspected by the testing lab for unacceptable materials based on ASTM D 2488.

PART 2 - PRODUCTS

2.1 MATERIAL CLASSIFICATIONS

- A. Materials for backfill shall be classified for the purpose of quality control in accordance with the Unified Soil Classification Symbols as defined in ASTM D 2487. Material use and application is defined in utility installation specifications and Drawings either by class, as described in Paragraph 2.1B, or by product descriptions, as given in Paragraph 2.2.
- B. Class Designations Based on Laboratory Testing:
1. Class I: Well-graded gravels and sands, gravel-sand mixtures, crushed well-graded rock, little or no fines (GW, SW):
 - a. Plasticity index: nonplastic.
 - b. Gradation: D60/D10 - greater than 4 percent; amount passing No. 200 sieve - less than or equal to 5 percent.
 2. Class II: Poorly graded gravels and sands, silty gravels and sands, little to moderate fines:
 - a. Plasticity index: nonplastic to 4.
 - b. Gradations:
 - (1) Gradation (GP, SP): amount passing No. 200 sieve - less than 5 percent.
 - (2) Gradation (GM, SM): amount passing No. 200 sieve - between 12 percent and 50 percent.
 - (3) Borderline gradations with dual classifications (e.g., SP-SM): amount passing No. 200 sieve - between 5 percent and 12 percent.
 3. Class III: Clayey gravels and sands, poorly graded mixtures of gravel, sand, silt, and clay (GC, SC, and dual classifications, e.g., SP-SC):
 - a. Plasticity index: greater than 7.
 - b. Gradation: amount passing No. 200 sieve - between 12 percent and 50 percent.

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4. Class IVA: Lean clays (CL).
 - a. Plasticity Indexes:
 - (1) Plasticity index: greater than 7, and above A line.
 - (2) Borderline plasticity with dual classifications (CL-ML): PI between 4 and 7.
 - b. Liquid limit: less than 50.
 - c. Gradation: amount passing No. 200 sieve - greater than 50 percent.
 - d. Inorganic.
 5. Class IVB: Fat clays (CH)
 - a. Plasticity index: above A line.
 - b. Liquid limit: 50 or greater.
 - c. Gradation: amount passing No. 200 sieve - greater than 50 percent.
 - d. Inorganic.
 6. Use soils with dual class designation according to ASTM D 2487, and which are not defined above, according to the more restrictive class.

2.2 PRODUCT DESCRIPTIONS

- A. Soils classified as silt (ML), elastic silt (MH), organic clay and organic silt (OL, OH), and organic matter (PT) are not acceptable as backfill materials. These soils may be used for site grading and restoration in unimproved areas as approved by the Owner. Soils in Class IVB, fat clay (CH) may be used as backfill materials where allowed by the applicable backfill installation specification. Refer to Section 31 23 16.16 - Excavation and Backfill for Utilities.
- B. Provide backfill material that is free of stones greater than 4 inches, free of roots, waste, debris, trash, organic material, unstable material, non-soil matter, hydrocarbon or other contamination, conforming to the following limits for deleterious materials:
 1. Clay lumps: Less than 0.5 percent for Class I, and less than 2.0 percent for Class II, when tested in accordance with ASTM C 142.
 2. Lightweight pieces: Less than 5 percent when tested in accordance with ASTM C 123.

- 3. Organic impurities: No color darker than standard color when tested in accordance with ASTM C 40.

- C. Manufactured materials, such as crushed concrete, may be substituted for natural soil or rock products where indicated in the product specification, and approved by the Engineer, provided that the physical property criteria are determined to be satisfactory by testing.

- D. Bank Run Sand: Durable bank run sand classified as SP, SW, or SM by the Unified Soil Classification System (ASTM D 2487) meeting the following requirements:
 - 1. Less than 15 percent passing the number 200 sieve when tested in accordance with ASTM D 1140. The amount of clay lumps or balls not exceeding 2 percent.
 - 2. Material passing the number 40 sieve shall meet the following requirements when tested in accordance with ASTM D 4318:
 - a. Liquid limit: not exceeding 25 percent.
 - b. Plasticity index: not exceeding 7.

- E. Concrete Sand: Natural sand, manufactured sand, or a combination of natural and manufactured sand conforming to the requirements of ASTM C 33 and graded within the following limits when tested in accordance with ASTM C 136:

| Sieve | Percent Passing |
|---------|-----------------|
| 3/8" | 100 |
| No. 4 | 95 to 100 |
| No. 8 | 80 to 100 |
| No. 16 | 50 to 85 |
| No. 30 | 25 to 60 |
| No. 50 | 10 to 30 |
| No. 100 | 2 to 10 |

- F. Gem Sand: Sand conforming to the requirements of ASTM C 33 for coarse aggregates specified for number 8 size and graded within the following limits when tested in accordance with ASTM C 136:

| Sieve | Percent Passing |
|-------|-----------------|
| 3/8" | 95 to 100 |
| No. 4 | 60 to 80 |
| No. 8 | 15 to 40 |

- G. Pea Gravel: Durable particles composed of small, smooth, rounded stones or pebbles and graded within the following limits when tested in accordance with ASTM C 136:

| Sieve | Percent Passing |
|--------|-----------------|
| 1/2" | 100 |
| 3/8" | 85 to 100 |
| No. 4 | 10 to 30 |
| No. 8 | 0 to 10 |
| No. 16 | 0 to 5 |

- H. Crushed Aggregates: Crushed aggregates consist of durable particles obtained from an approved source and meeting the following requirements:
1. Materials of one product delivered for the same construction activity from a single source.
 2. Non-plastic fines.
 3. Los Angeles abrasion test not exceeding 45 percent when tested in accordance with ASTM C 131.
 4. Crushed aggregate shall have a minimum of 90 percent of the particles retained on the No. 4 sieve with 2 or more crushed faces as determined by Test Method Tex-460-A, Part I.
 5. Crushed stone: Produced from oversize plant processed stone or gravel, sized by crushing to predominantly angular particles from a naturally occurring single source. Uncrushed gravel is not acceptable material for embedment where crushed stone is shown on the applicable utility embedment drawing details.
 6. Crushed Concrete: Crushed concrete is an acceptable substitute for crushed stone as utility backfill. Gradation and quality control test requirements are the same as crushed stone. Provide crushed concrete produced from normal weight concrete of uniform quality; containing particles of aggregate and cement material, free from other substances such as asphalt, reinforcing steel fragments, soil, waste gypsum (calcium sulfate), or debris.

7. Gradations, as determined in accordance with Tex-110-E.

| Sieve | Percent Passing by Weight for Pipe Embedment by Ranges of Nominal Pipes Sizes | | |
|-------|--|----------|----------|
| | >15" | 15" - 8" | <8" |
| 1" | 95 - 100 | 100 | - |
| 3/4" | 60 - 90 | 90 - 100 | 100 |
| 1/2" | 25 - 60 | - | 90 - 100 |
| 3/8" | - | 20 - 55 | 40 - 70 |
| No. 4 | 0 - 5 | 0 - 10 | 0 - 15 |
| No. 8 | - | 0 - 5 | 0 - 5 |

- I. Select Backfill: Class III clayey gravel or sand or Class IV lean clay with a plasticity index between 7 and 20 or clayey soils treated with lime in accordance with Section 32 01 00 - Pavement Repair and Resurfacing, to meet plasticity criteria. Structural Select Backfill shall need the requirements described in the design plans or as directed by the Engineer.
- J. Random Backfill: Any suitable soil or mixture of soils within Classes I, II, III and IV; or fat clay (CH) where allowed by the applicable backfill installation specification. Refer to Section 31 23 16.16 - Excavation and Backfill for Minor Structures and Section 31 23 23.13 - Excavation and Backfill for Utilities.
- K. Cement Stabilized Sand: Conform to requirements of Section 31 32 13.16 - Cement Stabilized Sand.
- L. Concrete Backfill: Conform to Class B concrete as specified in Section 33 05 16 - Concrete for Utility Construction.

2.3 MATERIAL TESTING

- A. Ensure that material selected, produced and delivered to the project meets applicable specifications and is of sufficient uniform properties to allow practical construction and quality control.
- B. Source or Supplier Qualification. Perform testing, or obtain representative tests by suppliers, for selection of material sources and products. Provide test results for a minimum of three samples for each source and material type. Test samples of processed materials from current production representing material to be delivered. Tests shall verify that the materials meet specification requirements. Repeat qualification test procedures each time the source characteristic changes or there is a planned change in source location or supplier. Qualification tests shall include, as applicable:
 - 1. Gradation. Complete sieve analyses shall be reported regardless of the specified control sieves. The range of sieves shall be from the largest particle through the No. 200 sieve.
 - 2. Plasticity of material passing the No. 40 sieve.

3. Los Angeles abrasion test of material retained on the No. 4 sieve.
 4. Clay lumps.
 5. Lightweight pieces
 6. Organic impurities
- C. Production Testing. Provide reports to the Owner and the Engineer from an independent testing laboratory that backfill materials to be placed in the Work meet applicable specification requirements.
- D. Assist the Owner and Testing Lab in obtaining material samples for verification testing at the source or at the production plant.

PART 3 - EXECUTION

3.1 SOURCES

- A. Use of material encountered in the trench excavations is acceptable, provided applicable specification requirements are satisfied. If excavation material is not acceptable, provide from other approved source.
- B. Identify off-site sources for backfill materials at least 14 days ahead of intended use so that the Owner or Lab may obtain samples for verification testing.
- C. Obtain approval for each material source by the Owner before delivery is started. If sources previously approved do not produce uniform and satisfactory products, furnish materials from other approved sources. Materials may be subjected to inspection or additional verification testing after delivery. Materials which do not meet the specifications will be rejected. Do not use material which, after approval, has become unsuitable for use due to segregation, mixing with other materials, or by contamination. Once a material is approved by the Owner, expense for sampling and testing required to change to a different material will be credited to the Owner through a change order.
- D. Bank run sand, select backfill, and random backfill, if available in the project excavation, may be obtained by selective excavation and acceptance testing. Obtain additional quantities of these materials and other materials required to complete the work from off-site sources.
- E. The Owner or any provided geotechnical reference information does not represent or guarantee that any soil found in the excavation work will be suitable and acceptable as backfill material.

3.2 MATERIAL HANDLING

- A. When backfill material is obtained from either a commercial or non-commercial borrow pit, open the pit to expose the vertical faces of the various strata for identification and selection of approved material to be used. Excavate the selected material by vertical cuts extending through the exposed strata to achieve uniformity in the product.
- B. Establish temporary stockpile locations for practical material handling and control, and verification testing by the Owner in advance of final placement. Obtain approval from landowner for storage of backfill material on adjacent private property.
- C. When stockpiling backfill material near the project site, use appropriate covers to eliminate blowing of materials into adjacent areas and prevent runoff containing sediments from entering the drainage system.
- D. Place stockpiles in layers to avoid segregation of processed materials. Load material by making successive vertical cuts through entire depth of stockpile.

3.3 FIELD QUALITY CONTROL

A. Quality Control

- 1. The Owner or Engineer may sample, and test backfill at:
 - a. Sources including borrow pits, production plants and Contractor's designated off-site stockpiles.
 - b. On-site stockpiles.
 - c. Materials placed in the Work.
 - 2. The Owner or Engineer may resample material at any stage of work or location if changes in characteristics are apparent.
- B. Production Verification Testing: The Owner's testing laboratory will provide verification testing on backfill materials, as directed by the Engineer. Samples may be taken at the source or at the production plant, as applicable.

END OF SECTION

Section 31 10 00 - SITE CLEARING - PREPARATION OF SITE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This Item shall govern for the preparation of the site for construction operations by the removal and disposal of all obstructions, including obstructions not otherwise shown on the plans 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, outhouses and shacks.
- C. This Item shall also include the removal of trees and shrubs and other landscape features not designated for preservation, 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.

1.2 UNIT PRICES

- A. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring site clearing – preparation of site.

PART 2 - EXECUTION

2.1 PREPARATION

- A. 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 by the Engineer for preservation shall be carefully protected from abuse, marring, or damage during construction operations. Continual parking and/or servicing of equipment under the 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 Engineer and all exposed cuts over 2 inches in diameter shall be treated with a material approved by the Engineer.
- B. Culverts, storm sewers, manholes and inlets shall be removed in proper sequence for maintenance of traffic and drainage.
- C. Underground obstructions, except those items designated for preservation, shall be removed to the following depths:

1. In areas to receive embankment: 2 feet below natural ground, except when permitted by the plans, trees and stumps may be cut off as close to natural ground as practicable on areas which are to be covered by at least three feet of embankment.
2. In areas to be excavated: 2 feet below the lower elevation of the excavation.
3. All other areas: 1 foot below natural ground.

2.2 DISPOSAL

- A. Unless otherwise instructed by Owner or Engineer, all brush from existing trees and vegetation cleared on project site shall be collected and neatly stored on-site, in an area designated by Owner (for mulching and reuse).
- B. Contractor shall remove all debris, rock, trash and other material deemed objectionable by Owner or Engineer. Disposal shall be off-site shall be at contractor's sole expense.
- C. Unless otherwise shown herein, all materials and debris removed shall become the property of the Contractor and shall be removed from the project site in a manner satisfactory to Owner and Engineer.
- D. No timber shall be cut or defaced outside of the areas identified for clearing and demolition.

2.3 BACKFILL

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

END OF SECTION

Section 31 21 00 – FINE GRADING AND SOIL AMENDMENTS

PART 1 - GENERAL

1.01 SCOPE

- A Work in this section includes furnishing all labor, materials, equipment, and services required to construct, shape, and finish earthwork to the required lines, fine grades, and cross sections as specified herein and on the plans.
- B The Contractor will be responsible for the maintenance and protection and reestablishment of fine grades on the project. This responsibility includes areas that are disturbed or altered by any of the following: erosion due to natural or construction-related processes, trenching, planting, other construction operations, and malicious acts or vandalism by others.
- C The Contractor will enact erosion control measures as provided for in the plans.
- D The Contractor will replace topsoil that may be lost to erosion or construction processes.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A Brownsville PUB Standard Specifications.
- B Geotechnical Data for this project.
- C Section 31 2201 - Earthwork.
- D Grading Plan: Refer to landscape architectural and civil plan sheets.

1.03 TEST REPORTS

- A The Contractor will bear the cost of all re-testing requirements specified herein and in the Conditions of the Contract.

1.04 METHOD OF PAYMENT

- A Fine grading of the earthwork is a necessary and incidental part of the work. The total cost will be included in the Bid Proposal. Payment will not be made on a unit price basis nor by any other separate measured payment method.

1.05 GENERAL IMPORTANCE

A Properly placed and finished earthwork accomplished by fine grading is essential to the success of this project. Much of the areas to be planted in turfgrass have minimal surface gradients which must be properly finished to ensure positive surface drainage. The Contractor will be required to prove the competence and experience of his workers and subcontractors with respect to their abilities to execute the fine grading required on this project.

1.06 SAMPLES

A Provide one-gallon samples of each product specified herein for approval prior to installation

PART 2 - PRODUCTS

2.01 TOPSOIL AND UNCLASSIFIED FILL

A. Refer to Section 32 2201 - Earthwork.

2.02 "BLUE TOP" STAKES

A. Wooden stakes shall be used to mark final fine grades. Stakes shall be capable of being driven fully into the ground without splitting and without pulverization of their tops. Nominal dimensions of stakes shall be not less than 2"x2"x8" long with all four sides beveled into a sharpened bottom point at one end and with a flat top at the other end. After being driven to the proper elevation, each stake top shall be securely fitted with a brightly colored attachment of fibrous plastic strands suitable for promoting visual identification of the driven stake.

2.03 UNSUITABLE MATERIALS

A. Topsoil, select material, imported fill, or unclassified fill will be declared as "unsuitable" by the Owner if, in his opinion, any of the following conditions or matter and particles are present to a degree that is judged detrimental to the proposed use of the material.

1. Moisture.
2. Decayed or undecayed vegetation.
3. Hardpan clay, heavy clay, or clay balls.
4. Rubbish.
5. Construction rubble.
6. Sand or gravel.
7. Rocks, cobbles, or boulders.
8. Cementious matter.
9. Foreign matter of any kind.

B. Unsuitable materials will be disposed of as "waste" as specified.

C. Wet Material: If fill material is unsatisfactory for use as embankment solely because of high moisture content, the Architect/Engineer may grant the Contractor permission to process the material to reduce the moisture content to a usable optimum condition.

PART 3 - EXECUTION

3.01 GENERAL

- A. All fine grading and corresponding construction shall be performed as specified herein, and the completed work shall conform to the required lines, grades, and cross sections of the plans. Where topsoil has been lost to erosion or construction operations, it shall be replaced.

3.02 ALLOWABLE DEVIATION

- A. The maximum allowable deviation from the required finished grades of a line or plane shall be a slope (gradient) of plus or minus 0.5% in a horizontal dimension of eight (8') feet maximum. This shall be field tested by using an eight (8') foot long straight edge. If the surface has a deviation of more than one-half inch (½") above or below the midpoint of the straight edge when its ends rest on high or low points, the finished grade will be unsatisfactory and shall be immediately corrected.
- B. Surface gradients and flowlines may be similarly checked by the use of string lines and survey instruments. The Owner's Representative will be the judge of whether deviations from the designed gradients are acceptable or not.

3.03 LIMITS OF WORK

- A. The limits of areas to be fine graded shall generally correspond to the areas to be planted in turfgrass and to the areas to be paved. On this project, the entire area within the limits of the work shall be fine graded as indicated on the grading plans.

3.04 SEQUENCE OF WORK

- A. Fine grading will not begin until all underground installations are complete, in place, tested to be working properly, and properly backfilled. Fine grading will not be attempted until construction which involves heavy vehicles is complete. Such vehicles cause rutting and over compaction.
- B. After fine grading is accomplished, it shall be the Contractor's responsibility to protect all fine graded areas from vehicular traffic or other disruptive activities. Damages to the fine graded surfaces will be restored to a satisfactory condition as prescribed herein until the job is finished and accepted.
- C. Areas to be Planted in Turfgrass: Fine grading shall be performed as a final step after replacing topsoil and preparing the soil for planting. See the TURFGRASS PLANTING specifications.
- D. Topsoil mix shall first be placed and compacted to normal density, minimum 90% of Standard Proctor Density, at a depth of eight (8") inches maximum and shall be graded to within 0.10 foot of finished grade.

3.05 FINE GRADING OPERATIONS

- A. As a minimum, the following measures will be executed in the accomplishment of fine grading on athletic field areas and other areas to be planted in turfgrass. The Contractor may elect to use additional or supplemental measures to accomplish fine grading.
- B. In place topsoil shall be used, or replacement topsoil shall first be placed and compacted to normal density at a depth of three (3") inches and shall be rough graded to within 0.05 foot of finished grade.
- C. Fine grading shall be executed by the placement and use of final grade stakes or "blue tops." **Final grade stakes shall be placed at intervals not to exceed fifty (50') feet along the exact contour lines as dimensioned on the grading plan.** The stakes will be driven to the exact even foot elevation of the contour and will then be marked with a brightly colored plastic attachment.
- D. Final grade stakes will also be placed wherever a contour line makes a significant change of direction and on critical spot grades as directed by the Owner's Representative.
- E. Drainage Swales: Fine grading shall be executed as described above except that "blue top" final grade stakes will be placed at the points on the swale where grades are called out on the plans and on even contours on the swale bottom and on intervals not greater than fifty feet (50') apart.
- F. Fine grading will be executed with any or all of the following or other appropriate machinery: lightweight road grader, tractor box blade, discing machinery, weighted spike harrow, and weighted drags. It is anticipated that some areas of topsoil may become overcompacted and resistant to proper grading. Such areas will be loosened and pulverized with discing machinery and will then be recompact to normal density before fine grading. The use of a watering truck to moisten dried and hardened areas may be necessary.

3.06 EROSION CONTROL THROUGH COMPLETION OF PROJECT

- A. The Contractor is responsible for the maintenance of all finished surface gradients in the project until the project is declared complete. However, the project will not be complete until other work is complete and all areas within the project limits are satisfactorily fine graded and all turfgrass planting areas have been established with a uniform stand as specified. The Contractor will maintain erosion control measures over the entire area of the project up until final acceptance of the project by the Owner.

3.07 DENSITIES

- A. Topsoil: Densities of fine graded topsoil areas may range between eighty-five percent (85%) and ninety-two percent (92%) of Standard Density ASTM D 698 with plus or minus two (2) percentage points of optimum moisture content.

- B. Other Subgrades in General: Earth embankment shall be compacted in lifts at eighty-eight (88%) to ninety-two (92%) percent of Standard Density ASTM D698 with plus or minus two (2) percentage points of optimum moisture content

3.08 TESTING

- A. Spot field tests of soil densities shall be required of the Contractor by the Owner's Representative at the Contractor's expense at the place and time of the Owner's choosing. Any area not meeting density control requirements shall be immediately excavated, reconstructed, and retested, at the expense of the Contractor, until satisfactory results are obtained.

END OF SECTION

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Section 31 23 00 - EARTHWORK, EXCAVATION, FILL AND GRADING

PART 1 - GENERAL

1.1 This section shall cover earthwork, including general clearing, removal, disposal or reutilization of all excavated earthen materials necessary and placement of imported fill material for performing the Work as shown on the drawings, including sheeting and bracing, drainage, and other Work incidental to the preparation of the site for subsequent construction Work.

1.2 UNIT PRICES

A. Unit Prices.

1. No separate payment will be made for work performed under this Section unless listed in the bid items. Include cost of such work in Contract unit prices for items listed in bid form requiring earthwork, excavation, fill and grading.

PART 2 - PRODUCTS

2.1 Excavated Material: Contractor will utilize all of the excess excavated soil material that is not deemed objectionable unless otherwise instructed. All material will be placed, spread, compacted to lines and grades shown on plans or as directed by Engineer

2.2 Imported Fill: Select Backfill is acceptable as follows - Class III clayey gravel or sand or Class IV lean clay with a plasticity index between 7 and 20. For pavement subgrade, select fill will serve as an equal to soil treated with lime in accordance with Section 32 11 13.13 – Lime Treatment for Subgrade, to meet plasticity criteria.

2.3 Imported Fill: Random Backfill is acceptable as follows - Any suitable soil or mixture of soils within Classes I, II, III and IV; or fat clay (CH) where allowed by the applicable fill or backfill installation specification. Refer to Section 31 23 16.16 - Excavation and Backfill for Minor Structures.

- A. Excavation and Backfill for Utilities. If Random backfill is to be used for pavement subgrade, it shall be treated with lime in accordance with Section 32 11 13.13 – Lime Treatment for Subgrade, to meet plasticity criteria.

PART 3 - EXECUTION

3.1 GENERAL:

- A. Prior to commencing construction operations, the contractor shall make all the provisions necessary to assure the protection of all existing improvements, both onsite and offsite. Where identified, he shall protect trees, shrubs, planting and grass areas and shall make provisions for maintaining public travel in an acceptable manner.

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- B. PROTECTION OF EXISTING IMPROVEMENTS. Before any excavation is started, adequate protection shall be provided for all lawns, trees, shrubs, landscape work, fences, sidewalks, hydrants, utility poles, street, alley and driveway paving, curbs, storm sewers, ditches, headwalls, catch basins, surface inlets and all other improvements that are to remain in place. Such protection shall be provided as long as necessary to prevent damage from the Contractor's operations. Shrubs, bushes, small trees and flowers, which have to be removed to permit excavation for the waterline, shall be protected and replanted or replaced when the backfill is completed. The Contractor shall exercise every precaution to prevent damage to property within and outside easements.
 - C. Any damage to driveways, buildings, fences, retaining walls, culverts, drains, paving, sidewalks, etc. which are removed or damaged during construction shall be repaired by contractor. Repair, restoration or replacements of any improvements damaged or removed shall be the obligation of the contractor at no additional cost to Owner.
 - D. Contractor will obtain all necessary permits in public and private rights-of-way from the Owner or any other local regulatory authority, as required
 - E. Drainage: Contractor shall make provisions for temporarily handling runoff on site, flows in existing water bodies, ditches, sewers, and trenches by employing pipes, flumes, or other approved methods at all times when his operations would, in any way, interfere with the natural functioning of said water bodies, ditches, sewers and drains. The contractor shall at all times during construction provide and maintain sufficient equipment for the lawful disposal of all ponding water, or water which enters excavations, to render such area firm and dry through the construction phase.

3.2 DISPOSAL OF EXCAVATED MATERIAL

- A. Contractor will utilize all of the excess excavated material, unless otherwise instructed. In such event, Contractor shall dispose of material off site at no cost to Owner. All material will be graded and compacted as shown on plans or as directed by Engineer.

3.3 DESCRIPTION

- A. Work shall consist of the required excavation and placement of excavated materials, and the placement and compaction of imported fill material, within the limits of the site as shown on the plans. The proper utilization of all excavated and imported fill material and the construction shaping and finishing of all earth work on the entire length of pavement, and all other areas within the site will be done in conformity with the required lines, grades, and typical cross sections in accordance with specification requirements herein outlined.

3.4 CONSTRUCTION METHODS

- A. All excavation and corresponding embankment construction shall be performed as specified herein and in the design plans and the completed site shall conform to the established alignment, grades and cross sections.

- B. When using either excavated material or imported soil material to perform fill or grading operations, each lift shall be mechanically compacted in 6" (six inch) layers to a minimum density of 90% Standard Proctor, for general areas. Engineer may select random areas for density testing to confirm minimum compaction. In areas of street construction (subgrade) minimum density shall be 95%. For backfill of utilities (trenches) or structures, minimum density shall be as prescribed in the applicable specifications, or on the plans.

END OF SECTION

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Section 31 23 16.16 - EXCAVATION AND BACKFILL FOR MINOR STRUCTURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Excavation, backfilling, and compaction of backfill for minor structures.

1.2 UNIT PRICES

- A. Unit Prices.

- 1. No payment will be made for structural excavation and backfill under this Section. Include payment in unit price or lump sum for construction of structures.

1.3 DEFINITIONS

- A. Unsuitable Material: Unsuitable soil materials are the following:

- 1. Materials that are classified as ML, CL-ML, MH, PT, OH, and OL according to ASTM D 2487.
- 2. Materials that cannot be compacted to the required density due to gradation, plasticity, or moisture content.
- 3. Materials that contain large clods, aggregates, stones greater than 4 inches in any dimension, debris, vegetation, waste or any other deleterious materials.
- 4. Materials that are contaminated with hydrocarbons or other chemical contaminants.

- B. Suitable Material: Suitable soil materials are those meeting specification requirements. Unsuitable soils meeting specification requirements for suitable soils after treatment with lime or cement shall be considered suitable, unless otherwise indicated.

- C. Select Material: Material as defined in Section 31 06 20.16 - Utility Backfill Materials.

- D. Backfill: Select material meeting specified quality requirements, placed and compacted under controlled conditions around structures.

- E. Foundation Backfill Materials: Natural soil or manufactured aggregate meeting Class I requirements and geotextile filter fabrics as required, to control drainage and material separation. Foundation backfill material is placed and compacted as backfill where needed to provide stable support for the structure foundation base. Foundation backfill materials may include concrete fill and seal slabs.

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- F. Foundation Base: For foundation base material, use crushed stone aggregate with filter fabric as required, cement stabilized sand, or concrete seal slab. The foundation base provides a smooth, level working surface for the construction of the concrete foundation.
 - G. Foundation Subgrade: Foundation subgrade is the surface of the natural soil which has been excavated and prepared to support the foundation base or foundation backfill, where needed.
 - H. Ground Water Control Systems: Installations external to the excavation such as well points, eudctors, or deep wells. Ground water control includes dewatering to lower the ground water, intercepting seepage which would otherwise emerge from the side or bottom of the excavation, and depressurization to prevent failure or heaving of the excavation bottom. Refer to Section 31 23 19 - Control of Ground Water and Surface Water.
 - I. Surface Water Control: Diversion and drainage of surface water runoff and rainwater away from the excavation. Remove rainwater and surface water which accidentally enters the excavation as a part of excavation drainage.
 - J. Excavation Drainage: Removal of surface and seepage water in the excavation by sump pumping and using French drains surrounding the foundation to intercept the water.
 - K. Over-Excavation and Backfill: Excavation of subgrade soils with unsatisfactory bearing capacity or composed of otherwise unsuitable materials below the foundation as shown on Drawings and backfilled with foundation backfill material.
 - L. Shoring System: A structure that supports the sides of an excavation to maintain stable soil conditions and prevent cave-ins.

1.4 REFERENCES

- A. ASTM D 558 - Test Methods for Moisture-Density Relations of Soil Cement Mixtures.
- B. ASTM D 698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in. (304.88-mm) Drop.
- C. ASTM D 1556 - Density of Soil in Place by the Sand-Cone Method.
- D. ASTM D 2487 - Classification of Soils for Engineering Purposes.
- E. ASTM D 2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- F. ASTM D 3017 - Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depths).
- G. ASTM D 4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

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- H. TxDOT Tex-101-E - Preparation of Soil and Flexible Base Materials for Testing.
 - I. TxDOT Tex-110-E - Determination of Particle Size Analysis of Soils.
 - J. Federal Regulations, 29 CFR, Part 1926, Standards - Excavation, Occupational Safety and Health Administration (OSHA).

1.5 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 - Submittal Procedures.
- B. Submit a work plan for excavation and backfill for each structure with complete written description which identifies details of the proposed method of construction and the sequence of operations for construction relative to excavation and backfill activities. The descriptions, with supporting illustrations, shall be sufficiently detailed to demonstrate to the Owner that the procedures meet the requirements of the Specifications and Drawings.
- C. Submit excavation safety system plan.
 - 1. The excavation safety system plan shall be in accordance with applicable OSHA requirements for all excavations.
 - 2. The excavation safety system plan shall be in accordance with the requirements of Section 31 41 33 - Trench Safety System, for all excavations that fall under State and Federal trench safety laws.
- D. Submit a ground and surface water control plan in accordance with requirements in this Section and Section 31 23 19 - Control of Ground Water and Surface Water.
- E. Submit backfill material sources and product quality information in accordance with requirements of Section 31 06 20.16 - Utility Backfill Materials.

1.6 TESTS

- A. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by the Owner in accordance with requirements of Section 01 45 29 - Testing Laboratory Services and as specified in this Section.
- B. Contractor shall perform embedment and backfill material source qualification testing in accordance with requirements of Section 31 06 20.16 - Utility Backfill Materials and the design plans.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Perform excavation with equipment suitable for achieving the requirements of this Specification.
- B. Use equipment which will produce the degree of compaction specified. Backfill within 3 feet of walls shall be compacted with hand operated equipment. Do not use equipment weighing more than 10,000 pounds closer to walls than a horizontal distance equal to the depth of the fill at that time. Use hand operated power compaction equipment where use of heavier equipment is impractical or restricted due to weight limitations.

2.2 MATERIAL CLASSIFICATIONS

- A. Backfill materials shall conform to the classifications and product descriptions of Section 31 06 20.16 - Utility Backfill Materials. The classification or product description for backfill applications shall be as shown on the Drawings and as specified.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Conduct an inspection to determine condition of existing structures and other permanent installations.
- B. Set up necessary street detours and barricades in preparation for excavation if construction will affect traffic. Conform to State and local government requirements. Maintain barricades and warning devices at all times for streets and intersections where work is in progress, or where affected by the Work, and is considered hazardous to traffic movements.
- C. Perform work in accordance with OSHA standards. Employ an excavation safety system as specified in Section 31 41 33 - Trench Safety Systems.
- D. Remove existing pavements and structures, including sidewalks and driveways, in accordance with requirements of Section 02 41 13.13 - Removing Existing Pavements and Structures.
- E. Install and operate necessary dewatering and surface water control measures in accordance with requirements of Section 31 23 19 – Dewatering - Control of Ground Water and Surface Water.

3.2 PROTECTION

- A. Protect trees, shrubs, lawns, existing structures, and other permanent objects outside of grading limits and within the grading limits as designated on the Drawings.
- B. Protect and support above-grade and below-grade utilities which are to remain.
- C. Restore damaged permanent facilities to pre-construction conditions unless replacement or abandonment of facilities are indicated on the Drawings.
- D. Prevent erosion of excavations and backfill. Do not allow water to pond in excavations.
- E. Maintain excavation and backfill areas until start of subsequent work. Repair and recompact slides, washouts, settlements, or areas with loss of density at no additional cost to the City.

3.3 EXCAVATION

- A. Perform excavation work so that the underground structure can be installed to depths and alignments shown on Drawings. Use caution during excavation work to avoid disturbing surrounding ground and existing facilities and improvements. Keep excavation to the absolute minimum necessary. No additional payment will be made for excess excavation not authorized by Owner.
- B. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work at that location. Notify Owner and obtain instructions before proceeding in such areas.
- C. Immediately notify the agency or company owning any line which is damaged, broken or disturbed. Obtain approval from Owner and agency for any repairs or relocations, either temporary or permanent.
- D. Avoid settlement of surrounding soil due to equipment operations, excavation procedures, vibration, dewatering, or other construction methods.
- E. Provide surface drainage during construction to protect work and to avoid nuisance to adjoining property. Where required, provide proper dewatering and piezometric pressure control during construction.
- F. Conduct hauling operations so that trucks and other vehicles do not create a dirt nuisance in streets. Verify that truck beds are sufficiently tight and loaded in such a manner that objectionable materials will not spill onto streets. Promptly clear away any dirt, mud, or other materials that spill onto streets or are deposited onto streets by vehicle tires.
- G. Maintain permanent benchmarks, monumentation, and other reference points. Unless otherwise directed, replace those which are damaged or destroyed by the Work.

- H. Provide sheeting, shoring, and bracing where required to safely complete the Work, to prevent excavation from extending beyond limits indicated on Drawings, and to protect the Work and adjacent structures or improvements. Sheeting, shoring, and bracing used to protect workmen and the public shall conform to requirements of Section 31 41 33 - Trench Safety Systems.
- I. Prevent voids from forming outside of sheeting. Immediately fill voids with grout, concrete fill, cement stabilized sand, or other material approved by Owner.
- J. After completion of the structure, remove sheeting, shoring, and bracing unless shown on Drawings to remain in place or directed by Owner in writing that such temporary structures may remain. Remove sheeting, shoring and bracing in such a manner as to maintain safety during backfilling operations and to prevent damage to the Work and adjacent structures or improvements.
- K. Immediately fill and compact voids left or caused by removal of sheeting with cement stabilized sand or material approved by Owner.

3.4 HANDLING EXCAVATED MATERIALS

- A. Classify excavated materials. Place material which is suitable for use as backfill in orderly piles at a sufficient distance from excavation to prevent slides or cave-ins.
- B. Provide additional backfill material if adequate quantities of suitable material are not available from excavation and trenching operations at the site.

3.5 DEWATERING

- A. Provide ground water control per Section 31 23 19 - Control of Ground Water and Surface Water.
- B. Keep ground water surface elevation a minimum of 2 feet below the bottom of the foundation base.
- C. Maintain ground water control as directed by Section 31 23 19 - Control of Ground Water and Surface Water and until the structure is sufficiently complete to provide the required weight to resist hydrostatic uplift with a minimum safety factor of 1.2.

3.6 FOUNDATION EXCAVATION

- A. Notify Owner at least 48 hours prior to planned completion of foundation excavations. Do not place the foundation base until the excavation is accepted by the Owner.

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- B. Excavate to elevations shown on Drawings, as needed to provide space for the foundation base, forming a level undisturbed surface, free of mud or soft material. Remove pockets of soft or otherwise unstable soils and replace with foundation backfill material or a material as directed by the Owner. Prior to placing material over it, recompact the subgrade where indicated on the Drawings, scarifying as needed, to 95 percent of the maximum Standard Dry Density according to ASTM D 698. If the specified level of compaction cannot be achieved, moisture condition the subgrade and recompact until 95 percent is achieved, over-excavate to provide a minimum layer of 24 inches of foundation backfill material, or other means acceptable to the Owner.
 - C. Fill unauthorized excessive excavation with foundation backfill material or other material as directed by the Owner.
 - D. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying to maintain foundation subgrade in a satisfactory, undisturbed condition. Keep excavations free of standing water and completely free of water during concrete placement.
 - E. Soils which become unsuitable due to inadequate dewatering or other causes, after initial excavation to the required subgrade, shall be removed and replaced with foundation backfill material, as directed by Owner, at no additional cost to the City.
 - F. Place foundation base, or foundation backfill material where needed, over the subgrade on same day that excavation is completed to final grade. Where base of excavation is left open for longer periods, protect them with a seal slab or cement-stabilized sand.
 - G. Crushed aggregate, and other free draining Class I materials, shall have a filter fabric separating it from native soils or select material backfill. The fabric shall overlap a minimum of 12 inches beyond where another material stops contact with the soil.
 - H. Crushed aggregate, and other Class I materials, shall be placed in uniform layers of 8-inch maximum thickness. Compaction shall be by means of at least two passes of a vibratory compactor.

3.7 FOUNDATION BASE

- A. After the subgrade is properly prepared, including the placement of foundation backfill where needed, the foundation base shall be placed. The foundation base shall consist of a 12-inch layer of crushed stone aggregate or cement stabilized sand. Alternately, a 2000psi concrete seal slab with a minimum thickness of 4 inches may be placed. The foundation base shall extend a minimum of 12 inches beyond the edge of the structure foundation, unless shown otherwise on the Drawings.
- B. Where the foundation base and foundation backfill are of the same material, both can be placed in one operation.

3.8 BACKFILL

- A. Complete backfill to surface of natural ground or to lines and grades shown on Drawings. Use existing material that qualifies as select material, unless indicated otherwise. Deposit backfill in uniform layers and compact each layer as specified.
- B. Do not place backfill against concrete walls or similar structures until laboratory test breaks indicate that the concrete has reached a minimum of 85 percent of the specified compressive strength. Where walls are supported by slabs or intermediate walls, do not begin backfill operations until the slab or intermediate walls have been placed and concrete has attained sufficient strength.
- C. Remove concrete forms before starting backfill and remove shoring and bracing as work progresses.
- D. Maintain fill material at no less than 2 percent below nor more than 2 percent above optimum moisture content. Place fill material in uniform 8-inch maximum loose layers. Compaction of fill shall be to at least 95 percent of the maximum standard dry density according to ASTM D 698 under paved areas. Compact to at least 90 percent around structures below unpaved areas.
- E. Where backfill is placed against a sloped excavation surface, run compaction equipment across the boundary of the cut slope and backfill to form a compacted slope surface for placement of the next layer of backfill.
- F. Place backfill using cement stabilized sand in accordance with Section 31 32 13.16 - Cement Stabilized Sand.

3.9 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01 45 29 - Testing Laboratory Services.
- B. Tests will be performed initially on minimum of one different sample of each material type for plasticity characteristics, in accordance with ASTM D 4318, and for gradation characteristics, in accordance with Tex-101-E and Tex-110-E. Additional classification tests will be performed whenever there is a noticeable change in material gradation or plasticity.
- C. In-place density tests of compacted subgrade and backfill will be performed according to ASTM D 1556, or ASTM D 2922 and ASTM D 3017, and at the following frequencies and conditions:
 - 1. A minimum of one test for every 100 cubic yards of compacted backfill material.
 - 2. A minimum of three density tests for each full work shift.

3. Density tests will be performed in all placement areas.
 4. The number of tests will be increased if inspection determines that soil types or moisture contents are not uniform or if compacting effort is variable and not considered sufficient to attain uniform density.
- D. At least one test for moisture-density relationships will be initially performed for each type of backfill material in accordance with ASTM D 698. Additional moisture-density relationship tests will be performed whenever there is a noticeable change in material gradation or plasticity.
 - E. If tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at Contractor's expense.

3.10 DISPOSAL OF EXCESS MATERIAL

- A. Removal of site debris resulting from work under this section are the responsibility of the Contractor. Dispose of in accordance with local and state regulations.

END OF SECTION

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Section 31 23 19 – DEWATERING CONTROL OF GROUND WATER AND SURFACE WATER

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Dewatering, depressurizing, draining, and maintaining trenches, shaft excavations, structural excavations, and foundation beds in a stable condition, and controlling ground water conditions for trench and tunnel excavations.
- B. Protecting work against surface runoff and rising flood waters.
- C. Disposing of removed water.

1.2 UNIT PRICES

- A. Unit Prices.
 - 1. Payment for control of groundwater, regardless of depth, size or number of well points or time required to lower groundwater, is on a linear foot basis measured along the centerline of the structure being installed.
 - 2. No payment will be made for excavation drainage under this Section. Include payment in unit price for applicable utility installation.
 - 3. No payment will be made for control of surface water or surface drainage under this Section. Include payment in unit price for applicable utility installation.

1.3 REFERENCES

- A. ASTM D 698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49 kg) Rammer and 12-inch (304.8 mm) Drop.
- B. Federal Regulations, 29 CFR Part 1926, Standards-Excavation, Occupational Safety and Health Administration (OSHA).
- C. Federal Register 40 CFR (Vol. 55, No. 222) Part 122, EPA Administered Permit Programs (NPDES), Para.122.26(b)(14) Storm Water Discharge.

1.4 DEFINITIONS

- A. Ground water control includes both dewatering and depressurization of water-bearing soil layers.

1. Dewatering includes lowering the water table and intercepting seepage which would otherwise emerge from slopes or bottoms of excavations, or into tunnels and shafts, and disposing of removed water. The intent of dewatering is to increase stability of tunnel excavations and excavated slopes; prevent dislocation of material from slopes or bottoms of excavations; reduce lateral loads on sheeting and bracing; improve excavating and hauling characteristics of excavated material; prevent failure or heaving of the bottom of excavations; and to provide suitable conditions for placement of backfill materials and construction of structures and other installations.
 2. Depressurization includes reduction in piezometric pressure within strata not controlled by dewatering alone, as required to prevent failure or heaving of excavation bottom or instability of tunnel excavations.
- B. Excavation drainage includes placement of drainage materials, such as crushed stone and filter fabric, together with sump pumping in order to keep excavations free of surface and seepage water.
- C. Surface drainage includes use of temporary drainage ditches and dikes and installation of temporary culverts and sump pumps with discharge lines as required to protect the Work from any source of surface water.
- D. Equipment and instrumentation for monitoring and control of the ground water control system includes piezometers and monitoring wells, and devices, such as flow meters, for observing and recording flow rates.

1.5 PERFORMANCE REQUIREMENTS

- A. Conduct subsurface investigations to identify groundwater conditions and to provide parameters for design, installation, and operation of groundwater control systems.
- B. Design a ground water control system, compatible with requirements of Federal Regulations 29 CFR Part 1926 and Section 31.41.33 - Trench Safety Systems, to produce the following results:
1. Effectively reduce the hydrostatic pressure affecting:
 - a. Excavations.
 - b. Tunnel excavation, face stability or seepage into tunnels.
 2. Develop a substantially dry and stable subgrade for subsequent construction operations.
 3. Preclude damage to adjacent properties, buildings, structures, utilities, installed facilities, and other work.

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4. Prevent the loss of fines, seepage, boils, quick condition, or softening of the foundation strata.
 5. Maintain stability of sides and bottom of excavations.
- C. Provide ground water control systems may include single-stage or multiple-stage well point systems, deep wells, or combinations of these equipment types.
 - D. Provide drainage of seepage water and surface water, as well as water from any other source entering the excavation. Excavation drainage may include placement of drainage materials, such as crushed stone and filter fabric, together with sump pumping.
 - E. Provide ditches, berms, pumps and other methods necessary to divert and drain surface water from excavation and other work areas.
 - F. Locate ground water control and drainage systems so as not to interfere with utilities, construction operations, adjacent properties, or adjacent water wells.
 - G. Assume sole responsibility for ground water control systems and for any loss or damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the ground water control operations. Modify ground water control systems or operations if they cause or threaten to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells, or affect potentially contaminated areas. Repair damage caused by ground water control systems or resulting from failure of the system to protect property as required.
 - H. Provide an adequate number of piezometers installed at the proper locations and depths as required to provide meaningful observations of the conditions affecting the excavation, adjacent structures, and water wells.
 - I. Provide environmental monitoring wells installed at the proper locations and depths as required to provide adequate observations of hydrostatic conditions and possible contaminant transport from contamination sources into the work area or into the ground water control system.
 - J. Decommission piezometers and monitoring wells installed during design phase studies and left for Contractors monitoring and use.

1.6 SUBMITTALS

- A. Submittals shall conform to requirements of Section 01 33 00 - Submittals.
- B. Submit a Ground Water and Surface Water Control Plan for review by the Owner and Engineer prior to start of any field work. The Plan shall be signed by a Professional Engineer registered in the State of Texas. Submit a plan to include the following:

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1. Results of subsurface investigation and description of the extent and characteristics of water bearing layers subject to ground water control.
 2. Names of equipment suppliers and installation subcontractors.
 3. A description of proposed ground water control systems indicating arrangement, location, depth and capacities of system components, installation details and criteria, and operation and maintenance procedures.
 4. A description of proposed monitoring and control system indicating depths and locations of piezometers and monitoring wells, monitoring installation details and criteria, type of equipment and instrumentation with pertinent data and characteristics.
 5. A description of proposed filters including types, sizes, capacities and manufacturer's application recommendations.
 6. Design calculations demonstrating adequacy of proposed systems for intended applications. Define potential area of influence of ground water control operation near contaminated areas.
 7. Operating requirements, including piezometric control elevations for dewatering and depressurization.
 8. Excavation drainage methods including typical drainage layers, sump pump application and other necessary means.
 9. Surface water control and drainage installations.
 10. Proposed methods and locations for disposing of removed water.
- C. Submit the following records upon completed initial installation:
1. Installation and development reports for well points, eductors, and deep wells.
 2. Installation reports and baseline readings for piezometers and monitoring wells.
 3. Baseline analytical test data of water from monitoring wells.
 4. Initial flow rates.
- D. Submit the following records on a weekly basis during operations:
1. Records of flow rates and piezometric elevations obtained during monitoring of dewatering and depressurization. Refer to Paragraph 3.02, Requirements for Eductor, Well Points, or Deep Wells.

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2. Maintenance records for ground water control installations, piezometers, and monitoring wells.
 - E. Submit the following records at end of work. Decommissioning (abandonment) reports for monitoring wells and piezometers installed by other during the design phase and left for Contractor's monitoring and use.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Comply with requirements of agencies having jurisdiction.
- B. Comply with Texas Natural Resource Conservation Commission regulations and Texas Water Well Drillers Association for development, drilling, and abandonment of wells used in dewatering system.
- C. Obtain permit from EPA under the National Pollutant Discharge Elimination System (NPDES), for storm water discharge from construction sites. Refer to Section 31 25 00 – Erosion & Sedimentation Controls TPDES Permit Requirements.
- D. Obtain all necessary permits from agencies with control over the use of groundwater and matters affecting well installation, water discharge, and use of existing storm drains and natural water sources. Because the review and permitting process may be lengthy, take early action to pursue and submit for the required approvals.
- E. Monitor ground water discharge for contamination while performing pumping in the vicinity of potentially contaminated sites.

PART 2 - PRODUCTS

2.1 EQUIPMENT AND MATERIALS

- A. Equipment and materials are at the option of Contractor as necessary to achieve desired results for dewatering. Selected equipment and materials are subject to review by the Owner and Engineer through submittals required in Paragraph 1.06, Submittals.
- B. Eductors, well points, or deep wells, where used, must be furnished, installed and operated by an experienced contractor regularly engaged in ground water control system design, installation, and operation.
- C. All equipment must be in good repair and operating order.
- D. Sufficient standby equipment and materials shall be kept available to ensure continuous operation, where required.

PART 3 - EXECUTION

3.1 GROUND WATER CONTROL

- A. Perform a subsurface investigation by borings as necessary to identify water bearing layers, piezometric pressures, and soil parameters for design and installation of ground water control systems. Perform pump tests, if necessary, to determine the drawdown characteristics of the water bearing layers. The results shall be presented in the Ground Water and Surface Water Control Plan (See Paragraph 1.06B.1).
- B. Provide labor, material, equipment, techniques and methods to lower, control and handle ground water in a manner compatible with construction methods and site conditions. Monitor effectiveness of the installed system and its effect on adjacent property.
- C. Install, operate, and maintain ground water control systems in accordance with the Ground Water and Surface Water Control Plan. Notify the Engineer in writing of any changes made to accommodate field conditions and changes to the Work. Provide revised drawings and calculations with such notification.
- D. Provide for continuous system operation, including nights, weekends, and holidays. Arrange for appropriate backup if electrical power is primary energy source for dewatering system.
- E. Monitor operations to verify that the system lowers ground water piezometric levels at a rate required to maintain a dry excavation resulting in a stable subgrade for prosecution of subsequent operations.
- F. Where hydrostatic pressures in confined water bearing layers exist below excavation, depressurize those zones to eliminate risk of uplift or other instability of excavation or installed works. Allowable piezometric elevations shall be defined in the Ground Water and Surface Water Control Plan.
- G. Remove ground water control installations.
 - 1. Remove pumping system components and piping when ground water control is no longer required.
 - 2. Remove piezometers, including piezometers installed during the design phase investigations and left for Contractor's use, upon completion of testing, in accordance with Section 33 31 11 Part 3.2 – Testing of Sanitary Sewer Pipe Work.
 - 3. Remove monitoring wells when directed by the Engineer.
 - 4. Grout abandoned well and piezometer holes. Fill piping that is not removed with cement-bentonite grout or cement-sand grout.

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- H. During backfilling, dewatering may be reduced to maintain water level a minimum of 5 feet below prevailing level of backfill. However, do not allow that water level to result in uplift pressures in excess of 80 percent of downward pressure produced by weight of structure or backfill in place. Do not allow water levels to rise into cement stabilized sand until at least 48 hours after placement.
 - I. Provide a uniform diameter for each pipe drain run constructed for dewatering. Remove pipe drain when it has served its purpose. If removal of pipe is impractical, provide grout connections at 50-foot intervals and fill pipe with cement-bentonite grout or cement-sand grout when pipe is removed from service.
 - J. Extent of construction ground water control for structures with a permanent perforated underground drainage system may be reduced, such as for units designed to withstand hydrostatic uplift pressure. Provide a means of draining the affected portion of underground system, including standby equipment. Maintain drainage system during operations and remove it when no longer required.
 - K. Remove system upon completion of construction or when dewatering and control of surface or ground water is no longer required.
 - L. Compact backfill to not less than 95 percent of the maximum dry density in accordance with ASTM D 698.

3.2 REQUIREMENTS FOR EDUCTOR, WELL POINTS, OR DEEP WELLS

- A. For aboveground piping in ground water control system, include a 12-inch minimum length of clear, transparent piping between every eductor well or well point and discharge header so that discharge from each installation can be visually monitored.
- B. Install sufficient piezometers or monitoring wells to show that all trench or shaft excavations in water bearing materials are pre-drain prior to excavation. Provide separate piezometers for monitoring of dewatering and for monitoring of depressurization. Install piezometers and monitoring wells for tunneling as appropriate for Contractor's selected method of work.
- C. Install piezometers or monitoring wells not less than one week in advance of beginning the associated excavation.
- D. Dewatering may be omitted for portions of underdrains or other excavations, but only where auger borings and piezometers or monitoring wells show that soil is pre-drained by an existing system such that the criteria of the ground water control plan are satisfied.
- E. Replace installations that produce noticeable amounts of sediments after development.
- F. Provide additional ground water control installations, or change the methods, in the event that the installations according to the ground water control plan does not provide satisfactory results based on the performance criteria defined by the plan and by the specification. Submit a revised plan according to Paragraph 1.06B.

3.3 EXCAVATION DRAINAGE

- A. Contractor may use excavation drainage methods if necessary, to achieve well-drained conditions. The excavation drainage may consist of a layer of crushed stone and filter fabric, and sump pumping in combination with sufficient wells for ground water control to maintain stable excavation and backfill conditions.

3.4 MAINTENANCE AND OBSERVATION

- A. Conduct daily maintenance and observation of piezometers or monitoring wells while the ground water control installations or excavation drainage are operating in an area or seepage into tunnel is occurring. Keep system in good condition.
- B. Replace damaged and destroyed piezometers or monitoring wells with new piezometers or wells as necessary to meet observation schedule.
- C. Cut off piezometers or monitoring wells in excavation areas where piping is exposed, only as necessary to perform observation as excavation proceeds. Continue to maintain and make observations, as specified.
- D. Remove and grout piezometers inside or outside the excavation area when ground water control operations are complete. Remove and grout monitoring wells when directed by the Engineer.

3.5 MONITORING AND RECORDING

- A. Monitor and record average flow rate of operation for each deep well, or for each wellpoint or educator header used in dewatering system. Also monitor and record water level and ground water recovery. These records shall be obtained daily until steady conditions are achieved, and twice weekly thereafter.
- B. Observe and record elevation of water level daily as long as ground water control system is in operation, and weekly thereafter until the Work is completed or piezometers or wells are removed, except when Engineer determines that more frequent monitoring and recording are required. Comply with Engineer's direction for increased monitoring and recording and take measures as necessary to ensure effective dewatering for intended purpose.

3.6 SURFACE WATER CONTROL

- A. Intercept surface water and divert it away from excavations through use of dikes, ditches, curb walls, pipes, sumps or other approved means. The requirement includes temporary works required to protect adjoining properties from surface drainage caused by construction operations.

- B. Divert surface water and seepage water into sumps and pump it into drainage channels or storm drains, when approved by agencies having jurisdiction. Provide settling basins when required by such agencies.

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SECTION 31 23 23.13 - EXCAVATION AND BACKFILL FOR UTILITIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Excavation, trenching, foundation, embedment, and backfill for installation of utilities, including manholes and other pipeline structures.

1.2 MEASUREMENT AND PAYMENT

A. Unit Prices.

- 1. No additional payment will be made for trench excavation, embedment and backfill under this Section. Include cost in the unit price for installed underground piping, sewer, conduit, or duct work.
- 2. No separate or additional payment will be made for surface water control, ground water control, or for excavation drainage. Include in the unit price for the installed piping, sewer, conduit, or duct work.

1.3 DEFINITIONS

- A. Pipe Foundation: Suitable and stable native soils that are exposed at the trench subgrade after excavation to depth of bottom of the bedding as shown on the Drawings, or foundation backfill material placed and compacted in over-excavations.
- B. Pipe Bedding: The portion of trench backfill that extends vertically from top of foundation up to a level line at bottom of pipe, and horizontally from one trench sidewall to opposite sidewall.
- C. Haunching: The material placed on either side of pipe from top of bedding up to springline of pipe and horizontally from one trench sidewall to opposite sidewall.
- D. Initial Backfill: The portion of trench backfill that extends vertically from springline of pipe (top of haunching) up to a level line 12 inches above top of pipe, and horizontally from one trench sidewall to opposite sidewall.
- E. Pipe Embedment: The portion of trench backfill that consists of bedding, haunching and initial backfill.
- F. Trench Zone: The portion of trench backfill that extends vertically from top of pipe embedment up to pavement subgrade or up to final grade when not beneath pavement.
- G. Unsuitable Material: Unsuitable soil materials are the following:

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1. Materials that are classified as ML, CL-ML, MH, PT, OH, and OL according to ASTM D 2487.
 2. Materials that cannot be compacted to required density due to either gradation, plasticity, or moisture content.
 3. Materials that contain large clods, aggregates, stones greater than 4 inches in any dimension, debris, vegetation, waste or any other deleterious materials.
 4. Materials that are contaminated with hydrocarbons or other chemical contaminants.
- H. Suitable Material: Suitable soil materials are those meeting specification requirements. Unsuitable soils meeting specification requirements for suitable soils after treatment with lime or cement are considered suitable, unless otherwise indicated.
- I. Backfill: Suitable material meeting specified quality requirements, placed and compacted under controlled conditions.
- J. Ground Water Control Systems: Installations external to trench, such as well points, eductors, or deep wells. Ground water control includes dewatering to lower ground water, intercepting seepage which would otherwise emerge from side or bottom of trench excavation, and depressurization to prevent failure or heaving of excavation bottom. Refer to Section 31 23 19 - Control of Ground Water and Surface Water.
- K. Surface Water Control: Diversion and drainage of surface water runoff and rain water away from trench excavation. Rain water and surface water accidentally entering trench shall be controlled and removed as a part of excavation drainage.
- L. Excavation Drainage: Removal of surface and seepage water in trench by sump pumping and using a drainage layer, as defined in ASTM D 2321, placed on the foundation beneath pipe bedding or thickened bedding layer of Class I material.
- M. Trench Conditions are defined with regard to the stability of trench bottom and trench walls of pipe embedment zone. Maintain trench conditions that provide for effective placement and compaction of embedment material directly on or against undisturbed soils or foundation backfill, except where structural trench support is necessary.
1. Dry Stable Trench: Stable and substantially dry trench conditions exist in pipe embedment zone as a result of typically dry soils or achieved by ground water control (dewatering or depressurization) for trenches extending below ground water level.
 2. Stable Trench with Seepage: Stable trench in which ground water seepage is controlled by excavation drainage.
 - a. Stable Trench with Seepage in Clayey Soils: Excavation drainage is provided in lieu of or to supplement ground water control systems to control seepage and provide stable trench subgrade in predominately clayey soils prior to bedding placement.

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- b. **Stable Wet Trench in Sandy Soils:** Excavation drainage is provided in the embedment zone in combination with ground water control in predominately sandy or silty soils.
 - 3. **Unstable Trench:** Unstable trench conditions exist in the pipe embedment zone if ground water inflow or high water content causes soil disturbances, such as sloughing, sliding, boiling, heaving or loss of density.
 - N. **Subtrench:** Subtrench is a special case of benched excavation. Subtrench excavation below trench shields or shoring installations may be used to allow placement and compaction of foundation or embedment materials directly against undisturbed soils. Depth of a subtrench depends upon trench stability and safety as determined by the Contractor.
 - O. **Trench Dam:** A placement of low permeability material in pipe embedment zone or foundation to prohibit ground water flow along the trench.
 - P. **Over-Excavation and Backfill:** Excavation of subgrade soils with unsatisfactory bearing capacity or composed of otherwise unsuitable materials below top of foundation as shown on Drawings, and backfilled with foundation backfill material.
 - Q. **Foundation Backfill Materials:** Natural soil or manufactured aggregate of controlled gradation, and geotextile filter fabrics as required, to control drainage and material separation. Foundation backfill material is placed and compacted as backfill to provide stable support for bedding. Foundation backfill materials may include concrete seal slabs.
 - R. **Trench Safety Systems** include both protective systems and shoring systems as defined in Section 31 41 33 - Trench Safety Systems.
 - S. **Trench Shield (Trench Box):** A portable worker safety structure moved along the trench as work proceeds, used as a protective system and designed to withstand forces imposed on it by cave-in, thereby protecting persons within the trench. Trench shields may be stacked if so designed or placed in a series depending on depth and length of excavation to be protected.
 - T. **Shoring System:** A structure that supports sides of an excavation to maintain stable soil conditions and prevent cave-ins, or to prevent movement of the ground affecting adjacent installations or improvements.
 - U. **Special Shoring:** A shoring system meeting special shoring as specified in Paragraph 1.08, Special Shoring Design Requirements, for locations identified on the Drawings.

1.4 REFERENCES

- A. ASTM C 12 - Standard Practice for Installing Vitrified Clay Pipe Lines.
- B. ASTM D 558 - Test Methods for Moisture-Density Relations of Soil Cement Mixtures.

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- C. ASTM D 698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (304.8-mm) Drop.
 - D. ASTM D 1556 - Test Method for Density in Place by the Sand-Cone Method.
 - E. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.
 - F. ASTM D 2487 - Classification of Soils for Engineering Purposes.
 - G. ASTM D 2922 - Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - H. ASTM D 3017 - Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
 - I. ASTM D 4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - J. TxDOT Tex-101-E - Preparation of Soil and Flexible Base Materials for Testing.
 - K. TxDOT Tex-110-E - Determination of Particle Size Analysis of Soils.
 - L. Federal Regulations, 29 CFR Part 1926, Standards-Excavation, Occupational Safety and Health Administration (OSHA).

1.5 SCHEDULING

- A. Schedule work so that pipe embedment can be completed on the same day that acceptable foundation has been achieved for each section of pipe installation, manhole, or other structures.

1.6 SUBMITTALS

- A. Conform to Section 01 33 00 - Submittal Procedures.
- B. Submit a written description for information only of the planned typical method of excavation, backfill placement and compaction, including:
 - 1. Sequence of work and coordination of activities.
 - 2. Selected trench widths.
 - 3. Procedures for foundation and embedment placement, and compaction.
 - 4. Procedure for use of trench boxes and other pre-manufactured systems while assuring specified compaction against undisturbed soil.
 - 5. Procedure for installation of Special Shoring at locations identified on the Drawings.

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- C. Submit a ground and surface water control plan in accordance with requirements in this Section and Section 31 23 19 – Dewatering - Control of Ground Water and Surface Water.
 - D. Submit backfill material sources and product quality information in accordance with requirements of Section 31 06 20.16 - Utility Backfill Materials.
 - E. Submit a trench excavation safety program in accordance with requirements of Section 31 41 33 - Trench Safety System. Include designs for special shoring meeting the requirements defined in Paragraph 1.08, Special Shoring Design Requirements.
 - F. Submit record of location of utilities as installed, referenced to survey control points. Include locations of utilities encountered or rerouted. Give stations, horizontal dimensions, elevations, inverts, and gradients.

1.7 TESTS

- A. Density testing of compacted subgrade material for first coarse and second coarse of compacted base shall be made at all driveways and intersecting streets. In addition, one (1) density test per lift per five hundred (500) feet of installed pipeline shall be conducted.
- B. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by the Owner in accordance with requirements of Section 01 45 29 - Testing Laboratory Services and as specified in this Section.
- C. Perform backfill material source qualification testing in accordance with requirements of Section 32 23 23.16 - Utility Backfill Materials.

1.8 SPECIAL SHORING DESIGN REQUIREMENTS

- A. Have special shoring designed or selected by the Contractor's Professional Engineer to provide support for the sides of the excavations, including soils and hydrostatic ground water pressures as applicable, and to prevent ground movements affecting adjacent installations or improvements such as structures, pavements and utilities. Special shoring may be a pre-manufactured system selected by the Contractor's Professional Engineer to meet the project site requirements based on the manufacturer's standard design.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Perform excavation with hydraulic excavator or other equipment suitable for achieving the requirements of this Section.
- B. Use only hand-operated tamping equipment until a minimum cover of 12 inches is obtained over pipes, conduits, and ducts. Do not use heavy compacting equipment until adequate cover is attained to prevent damage to pipes, conduits, or ducts.

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- C. Use trench shields or other protective systems or shoring systems which are designed and operated to achieve placement and compaction of backfill directly against undisturbed native soil.
 - D. Use special shoring systems where required which may consist of braced sheeting, braced soldier piles and lagging, slide rail systems, or other systems meeting requirements as specified in Paragraph 1.09, Shoring Design Requirements.

2.2 MATERIAL CLASSIFICATIONS

- A. Embedment and Trench Zone Backfill Materials: Conform to classifications and product descriptions of Section 32 23 23.16 - Utility Backfill Materials.
- B. Concrete Backfill: Conform to requirements for Class B concrete as specified in Section 33 05 16 - Concrete for Utility Construction.
- C. Concrete for Trench Dams: Concrete backfill or 3 sack premixed (bag) concrete.
- D. Timber Shoring Left in Place: Untreated oak.

PART 3 - EXECUTION

3.1 STANDARD PRACTICE

- A. Install flexible pipe, including "semi-rigid" pipe, to conform to standard practice described in ASTM D 2321, and as described in this Section. Where an apparent conflict occurs between the standard practice and the requirements of this Section, this Section governs.
- B. Install rigid pipe to conform to standard practice described in ASTM C 12, and as described in this Section. Where an apparent conflict occurs between the standard practice and the requirements of this Section, this Section governs.
- C. Ditching machines will be permitted at Contractor's option, subject to the approval of the Owner, whenever their use is applicable and practical for work shown on the drawings. A certain amount of hand excavation may be required due to special field conditions and to minimize damage to improvements and trees.
- D. In compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Any pipe damaged thereby shall be repaired or replaced at the option of the OWNER and at the expense of the Contractor.

3.2 PREPARATION

- A. Establish traffic control to conform with requirements of Section 01 55 26 - Traffic Control and Regulation. Maintain barricades and warning lights for streets and intersections affected by the Work that is considered hazardous to traffic movements.

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- B. Perform work to conform with applicable safety standards and regulations. Employ a trench safety system as specified in Section 31 41 33 - Trench Safety Systems.
 - C. Immediately notify the agency or company owning any existing utility line which is damaged, broken, or disturbed. Obtain approval from the Owner and Utility Owner for any repairs or relocations, either temporary or permanent.
 - D. Remove existing pavements and structures, including sidewalks and driveways, to conform with requirements of Section 02 41 13.13 - Removing Existing Pavements and Structures, as applicable.
 - E. Install and operate necessary dewatering and surface water control measures to conform with Section 31 23 19 – Dewatering - Control of Ground Water and Surface Water.
 - F. Maintain permanent benchmarks, monumentation, and other reference points. Unless otherwise directed in writing, replace those which are damaged or destroyed in accordance with Section 02 21 13 - Field Surveying.

3.3 PROTECTION

- A. Protect trees, shrubs, lawns, existing structures, and other permanent objects outside of grading limits and within the grading limits.
- B. Protect and support above-grade and below-grade utilities which are to remain.
- C. Restore damaged permanent facilities to pre-construction conditions unless replacement or abandonment of facilities are indicated on the Drawings.
- D. Take measures to minimize erosion of trenches. Do not allow water to pond in trenches. Where slides, washouts, settlements, or areas with loss of density or pavement failures or potholes occur, repair, recompact, and pave those areas at no additional cost to City.

3.4 EXCAVATION

- A. Except as otherwise specified or shown on the Drawings, install underground utilities in open cut trenches with vertical sides.
- B. Perform excavation work so that pipe, conduit, and ducts can be installed to depths and alignments shown on the Drawings. Avoid disturbing surrounding ground and existing facilities and improvements.
- C. Determine trench excavation widths using the following schedule as related to pipe outside diameter (O.D.). Maximum trench width shall be the minimum trench width plus 24 inches.

| <u>Nominal Pipe Size, Inches</u> | <u>Minimum Trench Width, Inches</u> |
|--------------------------------------|---|
| Less than 18 | O.D. + 18 |
| 18 to 30 | O.D. + 24 |
| Greater than 30 | O.D. + 36 |

- D. Use sufficient trench width or benches above the embedment zone for installation of well point headers or manifolds and pumps where depth of trench makes it uneconomical or impractical to pump from the surface elevation. Provide sufficient space between shoring cross braces to permit equipment operations and handling of forms, pipe, embedment and backfill, and other materials.

- E. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work at that location. Notify the Owner and obtain instructions before proceeding.

- F. Shoring of Trench Walls.
 - 1. Install Special Shoring in advance of trench excavation or simultaneously with the trench excavation, so that the soils within the full height of the trench excavation walls will remain laterally supported at all times.

 - 2. For all types of shoring, support trench walls in the pipe embedment zone throughout the installation. Provide trench wall supports sufficiently tight to prevent washing the trench wall soil out from behind the trench wall support.

 - 3. Unless otherwise directed by the Owner, leave sheeting driven into or below the pipe embedment zone in place to preclude loss of support of foundation and embedment materials. Leave rangers, walers, and braces in place as long as required to support sheeting, which has been cut off, and the trench wall in the vicinity of the pipe zone.

 - 4. Employ special methods for maintaining the integrity of embedment or foundation material. Before moving supports, place and compact embedment to sufficient depths to provide protection of pipe and stability of trench walls. As supports are moved, finish placing and compacting embedment.

 - 5. If sheeting or other shoring is used below top of the pipe embedment zone, do not disturb pipe foundation and embedment materials by subsequent removal. Maximum thickness of removable sheeting extending into the embedment zone shall be the equivalent of a 1-inch-thick steel plate. Fill voids left on removal of supports with compacted backfill material.

- G. Use of Trench Shields. When a trench shield (trench box) is used as a worker safety device, the following requirements apply:

1. Make trench excavations of sufficient width to allow shield to be lifted or pulled freely, without damage to the trench sidewalls.
2. Move trench shields so that pipe, and backfill materials, after placement and compaction, are not damaged nor disturbed, nor the degree of compaction reduced.
3. When required, place, spread, and compact pipe foundation and bedding materials beneath the shield. For backfill above bedding, lift the shield as each layer of backfill is placed and spread. Place and compact backfill materials against undisturbed trench walls and foundation.
4. Maintain trench shield in position to allow sampling and testing to be performed in a safe manner.

3.5 HANDLING EXCAVATED MATERIALS

- A. Use only excavated materials which are suitable as defined in this Section and conforming with Section 32 23 23.16 - Utility Backfill Materials. Place material suitable for backfilling in stockpiles at a distance from the trench to prevent slides or cave-ins.
- B. When required, provide additional backfill material conforming with requirements of Section 32 23 23.16 - Utility Backfill Materials.
- C. Do not place stockpiles of excess excavated materials on streets and adjacent properties. Protect excess stockpiles for use on site. Maintain site conditions in accordance with Section 31 10 00 – Site Clearing – Preparation of Site.

3.6 GROUND WATER CONTROL

- A. Implement ground water control according to Section 31 23 19 – Dewatering - Control of Ground Water and Surface Water. Provide a stable trench to allow installation in accordance with the Specifications.

3.7 TRENCH FOUNDATION

- A. Excavate bottom of trench to uniform grade to achieve stable trench conditions and satisfactory compaction of foundation or bedding materials.
- B. Place trench dams in Class I foundations in line segments longer than 100 feet between manholes, and not less than one in every 500 feet of pipe placed. Install additional dams as needed to achieve workable construction conditions. Do not place trench dams closer than 5 feet from manholes.

3.8 PIPE EMBEDMENT, PLACEMENT, AND COMPACTION

- A. Immediately prior to placement of embedment materials, the bottoms and sidewalls of trenches shall be free of loose, sloughing, caving, or otherwise unsuitable soil.
- B. Place embedment including bedding, haunching, and initial backfill as shown on Drawings.
- C. For pipe installation, manually spread embedment materials around the pipe to provide uniform bearing and side support when compacted. Do not allow materials to free-fall from heights greater than 24 inches above top of pipe. Perform placement and compaction directly against the undisturbed soils in the trench sidewalls, or against sheeting which is to remain in place.
- D. Do not place trench shields or shoring within height of the embedment zone unless means to maintain the density of compacted embedment material are used. If moveable supports are used in embedment zone, lift the supports incrementally to allow placement and compaction of the material against undisturbed soil.
- E. Place geotextile to prevent particle migration from the in-situ soil into open-graded (Class I) embedment materials or drainage layers.
- F. Do not damage coatings or wrappings of pipes during backfilling and compacting operations. When embedding coated or wrapped pipes, do not use crushed stone or other sharp, angular aggregates.
- G. Place haunching material manually around the pipe and compact it to provide uniform bearing and side support. If necessary, hold small-diameter or lightweight pipe in place during compaction of haunch areas and placement beside the pipe with sandbags or other suitable means.
- H. Install electrical conduit as directed in the design plans or as specified in other Sections.
- I. Shovel in-place and compact embedment material using pneumatic tampers in restricted areas, and vibratory-plate compactors or engine-powered jumping jacks in unrestricted areas. Compact each lift before proceeding with placement of next lift. Water tamping is not allowed.
- J. **OPEN CUT BACKFILL** - Backfilling of excavated trenches in open cut shall be commenced as soon as possible after the water or sewer line is laid and the jointing and alignment are approved, but not until authorized by the Owner.

BEDDING PROCEDURES - The following bedding procedures will be used for Polyvinyl Chloride (PVC) Pipe, Asbestos Cement Pipe and Vitrified Clay Pipe. Before pipes have been tested and approved, partial backfilling shall be done with approved material free from large clods.

When trench bottom is unstable, or when pipe is to be placed under groundwater (below water table), foundation preparation shall be required, preferably with ground water drawdown procedures. If drawdown equipment is not used or gravel stabilization or approved substitute shall be required and no pipe will be laid until stabilization is to the satisfaction of the Utility Owner.

Sand bedding shall meet Bank Run Sand as per Section 31 06 20.16 – Utility Backfill Materials.

Sand Bedding zone shall extend from a point at least 6 inches below bottom of pipe to a point at least 6 inches above top of pipe, as well as at least 6 inches on each side of pipe and shall be compacted to at least 90% of maximum density as determined by ASTM Standard D698, latest revision.

Sand bedding from 6 inches below bottom of pipe to bottom of pipe shall be placed in one lift and shall be mechanically tamped. Sand bedding from bottom of pipe to spring line of pipe shall be placed by hand in 4 inch lifts and shall be hand tamped with proper tools. Sand bedding from spring line of pipe to 6 inches above top of pipe shall be placed in 6 inch lifts and shall be hand tamped with proper tools.

Final Backfill Above Pipe Zone (6" Above Pipe or Conduit to base of roadway section or finished grade elevation). The backfill above the pipe zone shall be, unless otherwise indicated on the drawings, in accordance with the following.

1. Class "A" Mechanical Compaction. Trench under existing or proposed flexible pavements and gravel surfaces - place Type "D" (as per design plans) sand backfill material in layers not to exceed six (6) inches compacted measurement. Compact with mechanical tampers to a dry density of at least 95% of maximum density as determined by ASTM Standard D698, latest revision. Each layer, before compaction, shall be leveled and evenly distributed on both sides of the pipe so as not to disturb, displace or damage the water or sewer line in any way. When the material does not contain sufficient moisture to obtain thorough compaction, it shall be moistened or wetted as directed by the Utility Owner.
 2. Class "B" Mechanical Compaction. Trench under unimproved roadways, unsurfaced road shoulders, unimproved driveways and under turfed or seeded lawn areas - place Type "E" (as per design plans) excavated material in backfill layers not to exceed twelve (12) inches loose measurement. Compact with mechanical tampers to at least 90% of maximum density as determined by ASTM Standard D698, latest revision. Each layer, before compaction, shall be leveled and evenly distributed on both sides of the pipe so as not to disturb, displace or damage the water or sewer line in any way. When the material does not contain sufficient moisture to obtain thorough compaction, it shall be moistened or wetted as directed by the Utility Owner.
- K. SPECIAL BACKFILL CONDITIONS - The trenches need not be completely backfilled until all required pressure and leakage tests are performed and until the utilities system as installed conform to the requirements specified.

Trenches improperly backfilled shall be reopened to the depth required for proper compaction, and refilled and compacted as specified, or the condition shall be otherwise corrected as permitted by the Owner. The surface shall be restored to its original condition as nearly as practicable and as hereinafter specified. Immediately after the pipe, or utility lines, is bedded and joined, as indicated on the drawings or specified, the backfill material shall be deposited within the pipe zone in uniform layers not to exceed six (6) inches and at the proper moisture content. The layers shall be compacted with mechanical hand tampers or other approved equipment to the density herein specified. The backfill shall rise the same on each side of the pipe and coincidentally be tamped in layers until there is a cover of 12 inches over the top of the pipe. Walking or working over the pipe will not be permitted until the trench is backfilled to 12 inches above the pipe.

Where pavement on a State Highway or other system roadway is cut, final backfill material and pavement shall be replaced in accordance with Texas Department of Transportation requirements.

Where pavement is cut in locations other than State Highways, whether gravel topping or hard surfaced, the surfacing shall be restored to its original finish and in equal condition and quantities as found at the beginning of construction. Trenches on hard surfaced roads and State Highways shall be backfilled to a density of 95% as determined by the American Association of State Highway Officials Method T99 for compaction and density of soils.

Successful Contractor shall determine all requirements of various controlling agencies in connection with backfilling, pavement replacement and general construction before starting construction.

In traffic areas including individual driveways, Contractor shall restore traffic surfaces to usable condition immediately upon completion of pipe installation. In such locations, Owner will rely upon hydrostatic test to determine acceptability of construction. All excess dirt from all construction work shall be disposed of promptly by Contractor, either by hauling or at directions of Owner.

- L. Place trench dams in Class I embedments in line segments longer than 100 feet between manholes, and not less than one in every 500 feet of pipe placed. Install additional dams as needed to achieve workable construction conditions. Do not place trench dams closer than 5 feet from manholes.

3.9 TRENCH ZONE BACKFILL PLACEMENT AND COMPACTION

- A. Place backfill for pipe or conduits and restore surface as soon as practicable. Leave only the minimum length of trench open as necessary for construction.
- B. Where damage to completed pipe installation work is likely to result from withdrawal of sheeting, leave the sheeting in place. Cut off sheeting 1.5 feet or more above the crown of the pipe. Remove trench supports within 5 feet from the ground surface.
- C. For water and sewer lines, backfill in trench zone, including auger pits, as per the design plans and section 3.8.J.

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- D. When shown on Drawings, a random backfill of suitable material may be used in trench zone for trench excavations outside pavements.
 - E. Backfill materials shall be placed in uniform layers and compacted to percentage of density hereinafter specified. Moisture shall be controlled between optimum and 2 percentage points over. Methods to secure optimum moisture content shall be Contractor's responsibility. Compacting equipment and method of compaction shall be the responsibility of Contractor and shall be such that uniform density will be obtained over entire area and depth of material being compacted. Fill material shall be thoroughly broken up before being spread into uniform layers.

Backfill not otherwise specified shall be compacted to at least 95% of maximum density as determined by ASTM Specification D698.

- F. For trench excavations outside pavements, a random backfill of suitable material may be used in the trench zone.
 - 1. Fat clays (CH) may be used as trench zone backfill outside paved areas at the Contractor's option. If the required density is not achieved, the Contractor, at his option and at no additional cost to the Owner, may use lime stabilization to achieve compaction requirements or use a different suitable material.
 - 2. Maximum 9-inch compacted lift thickness for clayey soils and maximum 12-inch lift thickness for granular soils.
 - 3. Compact to a minimum of 90 percent of the maximum dry density determined according to ASTM D 698.
 - 4. Moisture content as necessary to achieve density.
- G. For electric conduits, remove formwork used for construction of conduits before placing trench zone backfill.

3.10 MANHOLES, JUNCTION BOXES, AND OTHER PIPELINE STRUCTURES

- A. Meet the requirements of adjoining utility installations for backfill of pipeline structures, as shown on the Drawings.

3.11 FIELD QUALITY CONTROL

- A. Test for material source qualifications as defined in Section 31 06 20.16 - Utility Backfill Materials.
- B. Provide excavation and trench safety systems at locations and to depths required for testing and retesting during construction at no additional cost to Owner.

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- C. Tests will be performed on a minimum of three different samples of each material type for plasticity characteristics, in accordance with ASTM D 4318, and for gradation characteristics, in accordance with Tex-101-E and Tex-110-E. Additional classification tests will be performed whenever there is a noticeable change in material gradation or plasticity.
- D. At least three tests for moisture-density relationships will be performed initially for backfill materials in accordance with ASTM D 698, and for cement- stabilized sand in accordance with ASTM D 558. Additional moisture-density relationship tests will be performed whenever there is a noticeable change in material gradation or plasticity.
- E. In-place density tests of compacted pipe foundation, embedment and trench zone backfill soil materials will be performed according to ASTM D 1556, or ASTM D 2922 and ASTM D 3017, and at the following frequencies and conditions.
1. A minimum of one test for every 20 cubic yards of compacted embedment and for every 50 cubic yards of compacted trench zone backfill material.
 2. A minimum of three density tests for each full shift of Work.
 3. Density tests will be distributed among the placement areas. Placement areas are: foundation, bedding, haunching, initial backfill and trench zone.
 4. The number of tests will be increased if inspection determines that soil type or moisture content are not uniform or if compacting effort is variable and not considered sufficient to attain uniform density, as specified.
 5. Density tests may be performed at various depths below the fill surface by pit excavation. Material in previously placed lifts may therefore be subject to acceptance/rejection.
 6. Two verification tests will be performed adjacent to in-place tests showing density less than the acceptance criteria. Placement will be rejected unless both verification tests show acceptable results.
 7. Recompacted placement will be retested at the same frequency as the first test series, including verification tests.
- F. Recondition, recompact, and retest at Contractor's expense if tests indicate Work does not meet specified compaction requirements. For hardened soil cement with nonconforming density, core and test for compressive strength at Contractor's expense.
- G. Acceptability of crushed rock compaction will be determined by inspection.
- H. Determination of density of backfill, shall be made in conformance with the requirements of ASTM D2922, ASTM D1556 or ASTM D2167.

- I. Determination of density of cohesionless material shall be made in accordance with ASTM D2049. Relative density of 75% shall be considered as satisfactory for cohesionless material.
- J. Testing shall be performed by a soil consultant employed by the Owner and at no expense to the Contractor to test compaction of backfill material. When soil tests indicate densities less than those specified by this section, the material shall be recompacted and tested at the Contractor's expense.

3.12 DISPOSAL OF EXCESS MATERIAL

- A. Dispose of excess materials in accordance with all applicable local and state regulations and as required in the contract documents.
- B. The Contractor shall restore or replace all removed or damaged paving, curbing sidewalks, gutters, shrubbery, fences, sod, or other disturbed surfaces of structures in a condition equal to that before the work began and to the satisfaction of the Owner and shall furnish all labor and material incidental thereto, in restoring improved surfaces, new pavement shall be laid. No permanent surface shall be placed within 30 days after the backfilling has been completed, except by order of the Owner.
- C. Surplus pipeline material, tools and temporary structures shall be removed by the Contractor. All dirt, rubbish, and excess earth from excavations shall be hauled to a dump provided by the Contractor, and the construction site shall be left clean, to the satisfaction of the Owner.

END OF SECTION

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Section 31 25 00 - EROSION & SEDIMENTATION CONTROLS TPDES REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This Section describes the required documentation to be prepared and signed by the Contractor before conducting construction operations, in accordance with the terms and conditions of the General Permit Number TXR150000 for discharges of storm water runoff from small construction sites.
- B. The Contractor shall be responsible for implementing the Storm Water Pollution Prevention Plan prepared for this project.
- C. Contractor shall review implementation of the Storm Water Pollution Prevention Plan (SWPPP) in a meeting with the Owner and Engineer prior to start of construction.

1.2 UNIT PRICES

- A. Unless prescribed elsewhere in the Contract Documents, payment for this item shall be made on a lump sum basis and shall cover the preparation and submittal of all required forms, payment of permit fees (if any), cost of implementation and maintenance of the storm water control measures as required throughout the project.

1.3 REFERENCES

- A. Part II.E.2. of TCEQ General Permit Number TXR150000.
- B. Part II.F.3 of TCEQ General Permit Number TXR150000 (notification of MS4 operator)

PART 2 - PRODUCTS - As required by Storm Water Pollution Prevention Plan.

PART 3 - EXECUTION

3.1 NOTICE OF ITENT

- A. The Contractor shall complete and sign a Notice of Intent (NOI) as "Operator" and submit it along with all required fees to TCEQ, the Owner, Engineer, City of Brownsville, and Cameron County Drainage District No. 1.
- B. A copy of the TCEQ's TPDES storm water general construction permit TXR150000 acknowledgement certificate shall be submitted to Owner, Engineer, City of Brownsville, and Cameron County Drainage District No. 1 and shall be posted at the construction site, as specified.

3.2 STORM WATER POLLUTION PREVENTION PLAN

- A. Contractor shall be responsible for implementation, maintenance, and inspection of storm water pollution prevention control measures including, but not limited to, erosion and sediment controls, storm water management plans, waste collection and disposal, off-site vehicle tracking, and other practices shown on the Storm Water Pollution Prevention Plan, or as specified by TCEQ or elsewhere in this or other Specifications.

3.3 RETENTION OF RECORDS

- A. The Contractor shall keep a copy of the Storm Water Pollution Prevention Plan at the construction site or at the Contractor's office from the date that it became effective to the date of project completion.
- B. At project closeout, the Contractor shall submit to TCEQ a Notice of Termination (NOT) form, along with all applicable fees. Copy of SWPPP and certificate or letter of acknowledgement from TCEQ, and all storm water pollution prevention records and data will be turned over and retained by Owner for a period of 3 years from the date of project completion.

3.4 REQUIRED NOTICES

- A. The following notices shall be posted from the date that this SWPPP goes into effect until the date of final site stabilization:
 - 1. TCEQ's TPDES storm water general construction permit TXR150000 acknowledgement certificate.
 - 2. Notice to drivers of equipment and vehicles, instructing them to stop, check, and clean tires of debris and mud before driving onto traffic lanes. Post such notices at every stabilized construction exit area.
 - 3. In an easily visible location on site, post a notice of waste disposal procedures.
 - 4. If applicable, notice of hazardous material handling and emergency procedures shall be posted on site. Keep copies of Material Safety Data Sheets at a location on site that is known to all personnel.
 - 5. Keep a copy of each signed certification at the construction site or at Contractor's office.

END OF SECTION

Section 31 32 13.16 – CEMENT STABILIZED SAND

1.1 GENERAL

A. Section Includes

1. Cement Stabilized Sand necessary for special backfill of utility line work.

1.2 UNIT PRICES

A. Unit Prices

1. Payment for cement stabilized sand necessary for utility line work special backfill conditions is on a cubic yard basis.
2. No payment will be made for cement stabilized sand required for backfill of minor structures as shown in the design plans. Include cost of such work in Contract unit prices for items listed in bid form requiring cement stabilized sand.

1.3 REFERENCES

- A. ASTM C 33 - Standard Specification for Concrete Aggregates (Fine Aggregate).
- B. ASTM C 40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
- C. ASTM C 42 - Standard Test Methods for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
- D. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.
- E. ASTM C 123 - Standard Test Method for Lightweight Particles in Aggregate.
- F. ASTM C 142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregates.
- G. ASTM C 150 - Specification for Portland Cement.
- H. ASTM D 558 - Standard Test Method for Moisture-Density Relations of Soil Cement – Mixtures.
- I. ASTM D 1632 - Standard Practice for Making and Curing Soil-Cement Compression and Flexure Test Specimens in the Laboratory
- J. ASTM D 1633 - Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders.
- K. ASTM D 2487 - Standard Test Method for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

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- L. ASTM D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
 - M. ASTM D 3665 - Standard Practice for Random Sampling of Construction Materials.
 - N. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS

- A. Conform to requirements of Section 01 33 00 - Submittal Procedures.
- B. Submit proposed target cement content and production data for sand-cement mixture in accordance with requirements of Paragraph 2.03, Materials Qualifications.

1.5 DESIGN REQUIREMENTS

- A. Use sand-cement mixture producing minimum unconfined compressive strength of 100 pounds per square inch (psi) in 48 hours and a maximum strength of 500 pounds per square inch (psi) at 7-days.
 - 1. Design will be based on strength specimens molded in accordance with ASTM D 558 at moisture content within 3 percent of optimum and within 2 hours of batching.
 - 2. Determine minimum cement content from production data and statistical history. Provide no less than 1.1 standard sack (94 lbs.) of cement per ton of dry sand.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cement: Type I Portland cement conforming to ASTM C 150.
- B. Sand: Clean, durable sand meeting grading requirements for fine aggregates of ASTM C 33, or requirements for bank run sand of Section 02320 - Utility Backfill Materials, and the following requirements:
 - 1. Classified as SW, SP, SW-SM, SP-SM, or SM by Unified Soil Classification System of ASTM D 2487.
 - 2. Deleterious materials:
 - a. Clay lumps, ASTM C 142 - less than 0.5 percent.
 - b. Lightweight pieces, ASTM C 123; less than 5.0 percent.
 - c. Organic impurities, ASTM C 40, color no darker than standard color.
 - 3. Plasticity index of 4 or less when tested in accordance with ASTM D 4318.

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- C. Water: Potable water, free of oils, acids, alkalies, organic matter or other deleterious substances, meeting requirements of ASTM C 94.

2.2 MIXING MATERIALS

- A. Add required amount of water and mix thoroughly in pugmill-type mixer.
- B. Stamp batch ticket at plant with time of loading. Reject material not placed and compacted within 2 hours after mixing.

2.3 MATERIAL QUALIFICATION

- A. Determine target cement content of material as follows:
 - 1. Obtain samples of sand-cement mixtures at production facility representing range of cement content consisting of at least three points.
 - 2. Complete molding of samples within 2 hours after addition of water.
 - 3. Perform strength tests (average of two specimens) at 48 hours and 7 days.
 - 4. Perform cement content tests on each sample.
 - 5. Perform moisture content tests on each sample.
 - 6. Plot average 48-hour strength vs. cement content.
 - 7. Record scale calibration date, sample date, sample time, molding time, cement feed dial settings, and silo pressure (if applicable).
- B. Test raw sand for following properties at point of entry into pug-mill:
 - 1. Gradation
 - 2. Plasticity index
 - 3. Organic impurities
 - 4. Clay lumps and friable particles
 - 5. Lightweight pieces
 - 6. Moisture content
 - 7. Classification
- C. Present data obtained in format similar to that provided in sample data form attached to this section.

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- D. The target content may be adjusted when statistical history so indicates. For determination of minimum product performance use formula:

$$f'c\% \ 1/2 \ \text{standard deviation}$$

PART 3 - EXECUTION

3.1 PLACING

- A. Place sand-cement mixture in maximum 12-inch-thick loose lifts and compact to 95 percent of maximum density as determined in accordance with ASTM D 558, unless otherwise specified. Refer to related specifications for thickness of lifts in other applications. Target moisture content during compaction is +3 percent of optimum. Perform and complete compaction of sand-cement mixture within 4 hours after addition of water to mix at plant.
- B. Do not place or compact sand-cement mixture in standing or free water.
- C. Where potable water lines cross wastewater line, embed wastewater line with cement stabilized sand in accordance with Texas Administrative Code §290.44(e)(4)(B):
1. Provide minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume. Use at least 2.5 standard bags of cement per cubic yard of mixture (2 standard sacks per ton of dry sand).
 2. Unless otherwise shown on Drawings, embed wastewater main or lateral minimum of six inches above and below waterline.

3.2 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01 45 29 - Testing Laboratory Services.
- B. One sample of cement stabilized sand shall be obtained for each 150 tons of material placed per day with no less than one sample per day of production. Random samples of delivered cement stabilized sand shall be taken in the field at point of delivery in accordance with ASTM 3665. Obtain three individual samples of approximately 12 to 15 lb. each from the first, middle, and last third of the truck and composite them into one sample for test purpose.
- C. Prepare and mold five specimens (for each sample obtained) in accordance with ASTM D 558, Method A, without adjusting moisture content. Samples will be molded at approximately same time material is being used, but no later than 2 hours after water is added to mix.
- D. After molding, specimens will be removed from molds and cured in accordance with ASTM D 1632.
- E. Specimens will be tested for compressive strength in accordance with ASTM D 1633, Method A. Two specimens will be tested at 48 hours, two specimens will be tested at 7 days and one specimen will be held for an additional 48 hour or 7-day test.

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- F. A strength test will be average of strengths of two specimens molded from same sample of material and tested at same age. Average daily strength will be average of strengths of all specimens molded during one day's production and tested at same age.
- G. Precision and Bias: Test results shall meet recommended guideline for precision in ASTM D 1633 Section 9.
- H. Reporting: Test reports shall contain, as a minimum, the following information:
1. Supplier and plant number
 2. Material Batch Time
 3. Material Sample Time
 4. Test age (hours)
 5. Average 48-hour strength
 6. Average 7-day strength
 7. Specification section number
 8. Indication of compliance / non-compliance
 9. Mixture identification
 10. Truck and ticket numbers
 11. The time of molding
 12. Moisture content at time of molding
 13. Required strength
 14. Test method designations
 15. Compressive strength data as required by ASTM D 1633
 16. Supplier mixture identification
 17. Specimen diameter and height, in.
 18. Specimen cross-sectional area, sq. in.

3.3 ACCEPTANCE

- A. Strength level of material will be considered satisfactory if:

1. The average 48-hour strength is greater than 100 psi with no individual strength test below 70 psi.
 2. All 7-day individual strength tests (average of two specimens) are greater than or equal to 100 psi and less than 500 psi.
- B. Material will be considered deficient when 7-day individual strength test (average of two specimens) is less than 100 psi but greater than 70 psi. See Paragraph 3.04 Adjustment for Deficient Strength.
- C. The material will be considered unacceptable and subject to removal and replacement at Contractor's expense when individual strength test (average of two specimens) has 7-day strength less than 70 psi.
- D. When moving average of three daily 48-hour averages falls below 100 psi, discontinue shipment to project until plant is capable of producing material, which exceeds 100 psi at 48 hours. Five 48-hour strength tests shall be made in this determination with no individual strength tests less than 100 psi.
- E. Testing laboratory shall notify Contractor, Engineer, and material supplier by email of tests indicating results falling below specified strength requirements within 24 hours.
- F. If any strength test of laboratory cured specimens falls below the specified strength, Contractor may, at his own expense, request test of cores drilled from the area in question in accordance with ASTM C42. In such cases, three (3) cores shall be taken for each strength test that falls below the values given in 3.03.A.
- G. Cement stabilized sand in an area represented by core tests shall be considered satisfactory if the average of three (3) cores is equal to at least 100 psi and if no single core is less than 70 psi. Additional testing of cores extracted from locations represented by erratic core strength results will be permitted.

3.4 ADJUSTMENT FOR DEFICIENT STRENGTH

- A. When mixture produces 7-day compressive strength greater than or equal to 100 psi, then material will be considered satisfactory and bid price will be paid in full.
- B. When mixture produces 7-day compressive strength less than 100 psi and greater than or equal to 70 psi, material shall be accepted contingent on credit in payment. Compute credit by the following formula:

$$\text{Credit per Cubic Yard} = \frac{\$100.00 \times 2 (100 \text{ psi} - \text{Actual psi})}{100}$$

- C. When mixture produces 7-day compressive strength less than 70 pounds per square inch, then remove and replace cement-sand mixture and paving and other necessary work at no cost to City.

END OF SECTION

Section 31 41 33 - TRENCH SAFETY SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Trench safety system for the construction of trench excavations.
- B. Trench safety system for structural excavations which fall under provisions of State and Federal trench safety laws.

1.2 UNIT PRICES

- A. Payment for this item shall be made on a lump sum basis and shall cover an approved trench safety system plan prepared and sealed by a Texas licensed professional engineer and as per OSHA 29CFR. Costs associated with any changes or revisions to the Contractor's Trench Safety Plan shall be borne on by the Contractor.
- B. Payment for trench safety systems used on trench excavations of greater than 5-foot depth is on a linear foot basis measured along the centerline of the trench.

1.3 DEFINITIONS

- A. A trench shall be defined as a narrow excavation (in relation to its depth) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet.
- B. The trench safety system requirements will apply to larger open excavations if the erection of structures or other installations limits the space between the excavation slope and these installation to dimensions equivalent of a trench as defined.
- C. Trench Safety Systems include but are not limited to sloping, sheeting, trench boxes or trench shields, sheet piling, cribbing, bracing, shoring, dewatering or diversion of water to provide adequate drainage.

1.4 SUBMITTALS

- A. Submittals shall conform to requirements of Section 01 33 00 - Submittal Procedures.
- B. Submit a safety program specifically for the construction of trench excavation. Design the trench safety program to be in accordance with OSHA 29CFR standards governing the presence and activities of individuals working in and around trench excavations.
- C. Construction and shop drawings containing deviations from OSHA standards or special designs shall be sealed by a licensed Engineer retained and paid by the Contractor.

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- D. Review of the safety program by the Owner or Engineer will only be regarding compliance with this specification and will not constitute approval by the Owner or Engineer nor relieve Contractor of obligations under State and Federal trench safety laws.

1.5 REGULATORY REQUIREMENTS

- A. Install and maintain trench safety systems in accordance with the detail specifications set out in the provision of Excavations, Trenching, and Shoring, Federal Occupation Safety and Health Administration (OSHA) Standards, 29CFR, Part 1926, Subpart P, as amended, including Final Rule, published in the Federal Register Vol. 54, No. 209 on Tuesday, October 31, 1989. The sections that are incorporated into these specifications by reference include Sections 1926-650 through 1926-652.
- B. A reproduction of the OSHA standards included in "Subpart P - Excavations" from the Federal Register Vol. 54, No. 209 is available upon request to Contractors bidding on City projects. The City assumes no responsibility for the accuracy of the reproduction. The Contractor is responsible for obtaining a copy of this section of the Federal Register.
- C. Legislation that has been enacted by the Texas Legislature regarding Trench Safety Systems, is hereby incorporated, by reference, into these specifications. Refer to Texas Health and Safety Code Ann., §756.021 (Vernon 1991).

1.6 INDEMNIFICATION

- A. Contractor shall indemnify and hold harmless the Owner, Engineer and their employees and agents, from any and all damages, costs (including, without limitation, legal fees, court costs, and the cost of investigation), judgements or claims by anyone for injury or death of persons resulting from the collapse or failure of trenches constructed under this Contract.
- B. Contractor acknowledges and agrees that this indemnity provision provides indemnity for the Owner and Engineer in case the Owner or Engineer are negligent either by act or omission in providing for trench safety, including, but not limited to safety program and design reviews, inspections, failures to issue stop work orders, and the hiring of the Contractor.

PART 2 - PRODUCTS – [NOT USED]

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install and maintain trench safety systems in accordance with provisions of OSHA 29CFR.
- B. Install specially designed trench safety systems in accordance with the Contractor's trench excavation safety program for the locations and conditions identified in the program.

- C. A competent person, as identified in the Contractor's Trench Safety Program, shall verify that trench boxes and other pre-manufactured systems are certified for the actual installation conditions.

3.2 INSPECTION

- A. Contractor, or Contractor's independently retained consultant, shall make daily inspections of the trench safety systems to ensure that the installed systems and operations meet OSHA 29CFR and other personnel protection regulations requirements.
- B. If evidence of possible cave-ins or slides is apparent, Contractor shall immediately stop work in the trench and move personnel to safe locations until the necessary precautions have been taken by Contractor to safeguard personnel entering the trench.
- C. Maintain a permanent record of daily inspections.

3.3 FIELD QUALITY CONTROL

- A. Contractor shall verify specific applicability of the selected or specially designed trench safety systems to each field condition encountered on the project.

END OF SECTION

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Section 32 01 00 - PAVEMENT REPAIR AND RESURFACING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Repairing and resurfacing streets, highways, driveways, sidewalks, and other pavements that have been cut, broken, or otherwise damaged during construction.

1.2 UNIT PRICES

- A. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring pavement repair and resurfacing.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Subgrade:
 - 1. Provide backfill material as required by applicable excavation and fill sections
 - 2. Provide material for stabilization as required by applicable portions of Section 32 11 13.13 - Lime Treatment of Subgrade.
- B. Base: Provide base material as required by applicable portions of Section 32 11 23 - Crushed Limestone Flexible Base.
- C. Pavement: Provide paving materials as required by applicable portions of Section 32 12 16.13 – Hot Mix Asphaltic Concrete Pavement or 32 16 00 - Concrete Curb and Gutter, Driveways and Sidewalk.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Conform to requirement of Section 02 41 13.13 - Removing Existing Pavements and Structures, for removals.
- B. Saw cut pavement 18 inches wider than width of trench needed to install utilities unless otherwise indicated on Drawings.

- C. Protect edges of existing pavement to remain from damage during removals, utility placement, backfill, and paving operations. For concrete pavement, leave and protect minimum of 18 inches of undisturbed subgrade on each side of trench to support replacement slab.

3.2 INSTALLATION

- A. Parking Areas, Service Drives, Driveways, and Sidewalks: Replace with material equal to or better than existing or as indicated on Drawings. Conform to applicable requirements of sections referenced in Paragraph 2.01, Materials.
- B. Street Pavements and Curbs, Curbs and Gutters: Replace subgrade, base, and surface course with like materials or as indicated on Drawings. Curbs and curbs and gutters shall match existing. Conform to requirements of sections referenced in Paragraph 2.01, Materials.
- C. For concrete pavement, install size and length of reinforcing steel and pavement thickness indicated on Drawings. Place types and spacing of joints to match existing or as indicated on Drawings.
- D. Where existing pavement consists of concrete pavement with asphaltic surfacing, resurface with minimum 2-inch depth asphaltic pavement.
- E. Repair State highway crossings in accordance with TxDOT permit and within 1 week after utility work is installed.

3.3 WASTE MATERIAL DISPOSAL

- A. Dispose of waste material in accordance with local and state laws and the responsibility of the Contractor.

3.4 PROTECTION

- A. Maintain pavement in good condition until completion of the Work.
- B. Replace damaged pavement.

END OF SECTION

Section 32 11 13.13 - LIME TREATMENT FOR SUBGRADE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This item shall consist of treating the existing subgrade, base, and pavement by the pulverizing, addition of lime, mixing, and compacting the mixed material to the required density. This item applied to natural ground, embankment, or existing pavement structure and shall be constructed as specified herein and in conformity with the typical sections, lines, and grades as shown on the plans or as established by the Engineer.

1.2 UNIT PRICES

A. Unit Prices.

1. Payment for lime treatment of the subgrade, existing subbase, existing base, and salvage pavement and base is on a square yard basis at the thickness shown in the design plans.
2. Payment for Type A Hydrated Lime is on a per ton weight (2,000 lbs.) basis at the percentage determined by the testing laboratory. The bid schedule is based on 5% lime stabilized subgrade at the depth specified in the bid item description. If the lime percentage tests show that less than 5% is required, the contractor shall notify the engineer of the difference in writing.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. The lime shall meet the requirements of the Item, "Lime Slurry", for the type of specified. When Type B, Commercial Lime Slurry, is specified, the Contractor shall select, prior to construction, the class to be used and shall notify the Engineer in writing before changing from one class to another.
- B. If the minimum design strength or percent of lime to be used for the treatment subgrade, existing subbase, or existing base is specified, it will be determined by preliminary tests performed in accordance with Test Method Tex-121-E. The percentage lime test (lime curve) is to be conducted by an approved testing laboratory, in accordance with 01 45 29, prior to the addition of lime to the subgrade. A soil sample shall be made available to the testing laboratory at least ten days prior to application. The lime percentage (lime curve) test shall be paid for by the Contractor. The bid schedule is based on 5% lime stabilized subgrade at the depth specified in the bid item description. If the lime percentage tests show that less than 5% is to be used, then the contractor shall notify the engineer of the difference in writing.

2.2 EQUIPMENT

- A. The machinery, tools, and equipment necessary for proper execution of the work shall be on the project and approved by the Engineer prior to the beginning of construction operations. All machinery, tools, and equipment used shall be maintained in a satisfactory and workmanlike manner.
- B. Hydrated lime shall be stored and handled in closed weatherproof containers until immediately before distribution on the road. If storage bins are used, they shall be completely enclosed. Hydrated lime in bags shall be stored in weatherproof buildings with adequate protection from ground dampness.
- C. If lime is furnished in trucks, each truck shall have the weight of lime certified on public scales.
- D. If lime is furnished in bags, each bag shall bear the manufacturer's certified weight. Bags varying more than 5 percent from that weight may be rejected and the average weight of bags in any shipment, as shown by weighing 50 bags taken at random, shall not be less than the manufacturer's certified weight.

2.3 EXECUTION

PART 3 - CONSTRUCTION METHODS

- A. General.
 - 1. It is the primary requirement of this specification to secure a completed course of treated material containing a uniform lime mixture, free from loose, or segregated areas, of uniform density and moisture content, well bound for its full depth and with a smooth surface suitable for placing subsequent courses. It shall be the responsibility of the Contractor to regulate the sequence of his work, to use the proper amount of lime, maintain the work and rework the courses as necessary to meet the above requirements.
 - 2. The paving areas shall be constructed and shaped to conform to the typical sections, lines and grades as shown on the plans or as established by the Engineer. The material, either before or after lime is added, shall be excavated to the secondary grade (proposed bottom of lime treatment) and removed or windowed to expose the secondary grade. Any wet or unstable materials below the secondary grade shall be corrected, as directed by the Engineer, by scarifying, adding lime, and compacting, or other methods until satisfactory stability is obtained.

3. If the Contractor elects to use a cutting and pulverizing machine that will remove the subgrade material accurately to the secondary grade and pulverize the material at the same time, he will not be required to expose the secondary grade nor windrow the material. However, the Contractor shall be required to roll the subgrade, as directed by the Engineer, before using the pulverizing machine and correct any soft areas that this rolling may reveal. This method will be permitted only where a machine is provided which will ensure that the material is cut uniformly to the proper depth and which has cutters that will plane the secondary grade to a smooth surface over the entire width of the cut. The machine shall be of such design that a visible indication is always given that the machine is cutting to the proper depth.

B. Application.

1. Lime shall be spread only on that area where the first mixing operations can be completed during the same working day.
2. The application and mixing of lime with the material shall be accomplished by the methods hereinafter described as “Dry Placing” or “Slurry Placing”. When Type A, Hydrated Lime, is specified, the Contractor may use either method, unless otherwise noted on the plans.
3. Dry Placing. The lime shall be spread by an approved spreader or by bag distribution at the rates shown on the plans or as directed by the Engineer.
4. The lime shall be distributed at a uniform rate and in such manner as to reduce the scattering of lime by wind to a minimum. Lime shall not be applied when wind conditions, in the opinion of the Engineer, are such that blowing lime becomes objectionable to traffic or adjacent property owners. A motor grader shall not be used to spread the lime.
5. The material shall be sprinkled as directed by the Engineer, until the proper moisture content has been secured.
6. Slurry Placing.
 - a. When Type A, Hydrated Lime, is specified and slurry placement is to be used, the Type A Hydrated shall be mixed with water to form a slurry of the solids content designated by the Engineer.
 - b. Where Type B, Commercial Lime Slurry is to be used, it shall be of the minimum solids and purity for the applicable grade being used. The distribution of lime at the rates shown on the plans or as directed by the Engineer shall be attained by successive passes over a measured section of roadway until the proper moisture and lime content has been secured.

- C. Mixing. The mixing procedure shall be the same for “Dry Placing” or Slurry Placing” as herein described.

1. The material and lime shall be thoroughly mixed by approved road mixers or other approved equipment, and the mixing continued until, in the opinion of the Engineer, a homogeneous friable mixture of material and lime is obtained, such that when all non-slaking aggregates retained on the 3/4" sieve are removed, the remainder of the material shall meet the following requirements when tested from the roadway in the roadway condition by laboratory sieves:

| | <u>Percent</u> |
|-------------------------------------|----------------|
| Minimum passing 1 - 3/4" sieve..... | 100% |
| Minimum passing 3/4" sieve..... | 85% |

2. The soil-lime mixture shall be sprinkled during the mixing operation as directed by the Engineer to provide optimum moisture in the mixing.
3. During the interval of time between application and mixing, hydrated lime that has been exposed to the open air for a period of 6 hours or more or has had excessive loss due to washing or blowing will not be accepted for payment.

D. Compaction.

1. Compaction of the mixture shall begin immediately after final mixing unless approval is obtained from the Engineer. The material shall be aerated or sprinkled as necessary to provide the optimum moisture. Compaction shall begin at the bottom and shall continue until the entire depth of mixture is uniformly compacted by the method of compaction hereinafter specified as the "Density Control" method as indicated on the plans.
2. If the total thickness of the material to be treated cannot be mixed in one operation, the previously mixed material shall be bladed to a window just beyond the area to be treated and the next layer mixed with lime as specified in Section (C). The first layer of the treated material shall be compacted in such a manner that the treated material will not be mixed with the underlying material.
3. When the "Density Control" method of compaction is indicated on the plans the following provisions shall apply:
4. The course shall be sprinkled as required and compacted to the extent necessary to provide the density specified below as determined by the use of the compaction ratio method:

| <u>Description</u> | <u>Density, Percent (Standard Proctor)</u> |
|--|--|
| For lime treated subgrade, existing subbase or existing base that will receive subsequent on the subbase or base courses. | Not less than 95 except when otherwise shown on plans. |
| For lime treated existing subgrade or existing base that will receive subsequent on the subbase or base courses. | Not less than 98 except when otherwise shown on the surface courses. |
| <p>5. In addition to the requirements specified for density, the full depth of the material shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section is completed, tests as necessary will be made by the Engineer. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements. Throughout this entire operation the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and in conformity with the typical section shown on the plans and to the established lines and grades. Should the material, due to any reason or cause, lose the required stability, density, and finish before the next course is placed or the work is accepted, it shall be reprocessed and refinished at the expense of the Contractor.</p> | |

3.2 FINISHING, CURING, & PREPARATION FOR SURFACING

1. After the final layer of the lime treated subgrade, subbase or base has been compacted, it shall be brought to the required lines and grades in accordance with the typical sections. The completed section shall then be finished by rolling as directed with a pneumatic tire or other suitable roller sufficiently light to prevent hair cracking. The completed section shall be moist cured for minimum of 7 days before further courses are added or any traffic is permitted, unless otherwise directed by the Engineer. In cases where subgrade treatment or subbase sets up sufficiently to prevent objectionable damage from traffic, such layers may be opened to construction and/or access traffic, and covered by other courses, the day following compaction, unless otherwise directed by the Engineer. If the plans, provide for the treated material to be sealed or covered by other courses of material, such seal or course shall be applied within 14 days after final mixing is completed, unless otherwise directed by the Engineer.

END OF SECTION

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Section 32 11 23 – FLEXIBLE BASE - CRUSHED LIMESTONE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This item shall govern the materials, placement compaction of Crushed Limestone Base to the lines and grades that are shown on the construction drawings. Crushed Limestone Base thickness for various pavement types are shown on the plans.

1.2 UNIT PRICES

A. Unit Prices

1. Payment for crushed limestone flexible base is on a square yard basis at the thickness shown in the design plans.

1.3 MATERIAL

- A. The flexible base shall be Type A Grade 1 in accordance with the most recent version of the Texas Department of Transportation “Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges”, Item 247 and meeting in the following requirements:
- B. Triaxial Class 1: Min. compressive strength, 45 at 0 psi lateral pressure and 175 at 15 psi lateral pressure.

| <u>RETAINED ON SQUARE SIEVE NUMBER</u> | <u>PERCENT RETAINED</u> |
|--|-------------------------|
| 1-3/4" (44 mm) | 0 |
| 7/8" (22.23 mm) | 10-35 |
| 3/8" (9.5 mm) | 30-50 |
| NUMBER 4 (4.75 mm) | 45-65 |
| NUMBER 40 (0.425mm) | 70-85 |

- C. Material passing the Number 40 Sieve shall be known as "Binder Materials" and shall meet the following requirements:

| | | |
|---------------------------------|---|-----|
| Maximum Liquid Limits (L.L) | = | 35 |
| Maximum Plasticity Index (P.I.) | = | 10 |
| Wet Ball Mill (max) | = | 40 |
| California Bearing Ratio (min.) | = | 100 |

- D. All aggregate retained on the Number 10 Sieve shall be comprised of only crushed limestone.

-
- E. The Contractor shall not place crushed limestone on the road bed until the Engineer has accepted the shaped and compacted subgrade.
 - F. The Contractor must maintain the roadbed free of holes, ruts and depressions and in condition to receive the crushed limestone.
 - G. The Contractor upon request shall provide certification that the material supplied meets the above requirements prior to delivery to the job site. Samples for testing of the material must be taken prior to the compaction operations.

1.4 CONSTRUCTION METHODS

- A. The flexible base material shall be placed on the approved subgrade in courses not to exceed six (6) inches compacted depth. It shall be the responsibility of the contractor that the required amount of material be delivered and uniformly spread and shaped. All material has been cut into the windrows, it shall be sprinkled, spread, shaped, and rolled in proper sequence to prevent segregation and as necessary for required compaction.
- B. The surface on completion shall be smooth and in conformity with typical sections and to the established lines and grades. Any deviation in excess of 1/4 inch in cross-section and in length of 16 feet measured longitudinally shall be corrected.
- C. Flexible base shall be compacted to an apparent dry density of not less than 98 percent of the maximum dry density as determined in accordance with ASTM Test method D698 (Standard Proctor). Tests for density will be made within 24 hours after compaction operations are completed. If the material fails to meet the density specified, it shall be reworked as necessary to meet the density required. Prior to placing any succeeding course of flexible base or surfacing on a previously completed course the density and moisture of the top three (3) inches of flexible base shall be checked and if the tests show the density to be more than 2 percent below the specified compaction and moisture content, it shall be reworked as necessary the density and moisture required.
- D. The first density and depth test at a specific location will be made by commercial testing laboratory, in accordance with 01 45 29, designated by the Owner and said tests shall be paid for the Owner. If the test fails, all other tests at the location shall be paid for by the Contractor, by deducting from the final payment.

END OF SECTION

Section 32 12 13.19 - PRIME COAT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. "Prime Coat" shall consist of an application of asphaltic material on the completed base course and/or other approved areas in accordance with these specifications as directed by the Inspector.

1.2 UNIT PRICES

A. Unit Prices

- 1. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form requiring prime coat.

1.3 MATERIALS

- A. The asphalt material for prime coat shall meet the requirement for Cut-Back Asphalt, MC-30, Item 300, "Asphalt, Oils, and Emulsions" of the most recent version of the Texas Department of Transportation "Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges".

1.4 CONSTRUCTION METHODS

- A. When, in the opinion of the Owner, the area and/or base is satisfactory to receive the prime coat, the surface shall be cleaned by sweeping or other approved methods as directed by the Owner. If directed by the Owner, the surface shall be lightly sprinkled with water just prior to application of the asphaltic material. The asphaltic material shall be applied on the clean surface by an approved distributor at a rate of 0.2 gallons per square yard of surface, evenly, and smoothly, under a pressure necessary for proper distribution. During the application of prime coat, care shall be taken to prevent splattering of adjacent pavement, curb and gutter or structures.
- B. Prime coat shall not be applied when the air temperature is below 60°F and falling, but may be applied when the air temperature is about 50°F and is rising; the air temperature being taken in the shade and away from artificial heat. Asphaltic material shall not be placed when general weather conditions, in the opinion of the Inspector, are not suitable.

END OF SECTION

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Section 32 12 16.13 - HOT MIX ASPHALTIC CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This item shall consist of a base course, a leveling-up course, a surface course, or any combination of these courses as shown on the plans, each to be composed of a compacted mixture of mineral aggregate and asphaltic material.
- B. The pavement shall be constructed on the previously completed and approved subgrade, base, existing pavement, bituminous surface or in the case of a bridge, on the prepared floor slab, as herein specified and in accordance with the details shown on the plans.

1.2 UNIT PRICES

A. Unit Prices

- 1. Payment for crushed limestone flexible base is on a square yard basis at the thickness shown in the design plans.

1.3 MATERIAL

- A. Hot Mix Asphaltic Concrete, Type "D" (Fine graded surface course) (Modified). The hot mix asphaltic concrete shall conform to the requirements of the Texas State Department of Highway & Special Provisions 340-115, with anti-stripping agent in accordance with Special Specifications Item 3373. The successful bidder shall submit a project specific asphalt mix design within thirty (30) days prior to installation the supplier demonstrating that the hot mix asphaltic concrete to be used meets these specifications. The asphalt to be used shall be A.C. 20. Special Modifications to Standard Specification Item 2\340, for this project are as follows:
 - 1. Asphalt Content. Asphaltic Material (AC-20) shall form from 5.0 to 8.0 percent of the mixture by weight.
 - 2. Retained Stability. The paving mixture shall have a retained stability of not less than 70 percent when tested in accordance with ASTM Standard Procedure D1075.
 - 3. Hveem Stability. Hveem stability shall not be less than 30.
 - 4. Aggregate retained on No. 10 Sieve shall be 100% Crushed Limestone.

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- B. Tack Coat. "Tack Coat" shall consist of an application of asphaltic material on the existing pavement in accordance with these specifications as directed by the Owner. The asphalt material for tack coat shall meet the requirement for Cut-Back Asphalt, RC-250, Item 300, "Asphalt, Oils, and Emulsions" of the most recent version of the Texas Department of Transportation "Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges".
 - C. "Prime Coat" shall consist of an application of asphaltic material on the completed base course and/or other approved areas in accordance with these specifications as directed by the Owner. The asphalt material for prime coat shall meet the requirement for Cut-Back Asphalt, MC-30, Item 300, "Asphalt, Oils, and Emulsions" of the most recent version of the Texas Department of Transportation "Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges".

1.4 CONSTRUCTION METHODS

- A. For Hot Mix Asphaltic Concrete Pavement being placed on Flexible Base Material: When the area and/or base is satisfactory to receive the prime coat, the surface shall be cleaned by sweeping or other approved methods as directed by the Owner. If directed by the Owner, the surface shall be lightly sprinkled with water just prior to application of the asphaltic material. The asphaltic material shall be applied on the clean surface by an approved distributor at a rate of 0.2 gallons per square yard of surface, evenly, and smoothly, under a pressure necessary for proper distribution.
- B. For Hot Mix Asphaltic Concrete Pavement being placed on Existing HMAC Material: When the existing pavement is satisfactory to receive the tack coat, the surface shall be cleaned by sweeping or other approved methods as directed by the Owner. The asphaltic material shall be applied on the clean surface by an approved distributor at a rate not to exceed 0.11 or below 0.05 gallons per square yard of surface, evenly, and smoothly, under a pressure necessary for proper distribution.
- C. During the application of Prime and Tack coat, care shall be taken to prevent splattering of adjacent curb and gutter or structures. Prime and Tack coat shall not be applied when the air temperature is below 60°F and falling but may be applied when the air temperature is about 50°F and is rising; the air temperature being taken in the shade and away from artificial heat. Asphaltic material shall not be placed when general weather conditions, in the opinion of the Owner, are not suitable.
- D. Construction methods used in Hot Mix Asphaltic Concrete Pavement shall meet the requirements as set forth in Item 340 "Hot Mix Asphaltic Concrete Pavement" of the most recent version of the Texas Department of Transportation "Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges", with the following additions:

E. If the temperature of the asphaltic mixture of a load or any part of a load becomes less than 225°F or more than 350°F after being dumped from the mixer and prior to passing through the lay-down machine, all or any part of the load may be rejected.

1. Transporting Asphaltic Concrete. The asphaltic mixture, prepared as specified above, shall be hauled to the work in tight vehicles previously cleaned of all foreign material. The dispatching of the vehicles shall be arranged so that all material delivered may be places, and all rolling shall be completed during daylight hours. In cool weather or for long hauls, canvas covers and insulating of the truck bodies may be required. The inside of the truck body may be given a light coating of oil, lime slurry, or other material satisfactory to the Engineer, if necessary, to prevent mixture from adhering to the body.

F. Placing

1. Generally, the asphaltic mixture shall be dumped and spread on the approved prepared surface with specified spreading and finishing machine, in such manner that when properly compact the finished pavement will be smooth, of uniform density and will meet the requirements of the typical cross sections and the surface tests. During the application of asphaltic material, care shall be taken to prevent splattering of adjacent pavement, curb, gutter and structures.
2. In placing a level-up course with the spreading and finishing machine, binder twine or cord shall be set to line and grade established by the Engineer. If approved by the Engineer, level-up courses may be spread with a motor grader.
3. When the asphaltic mixture is placed in a narrow strip along the edge of an existing pavement, or used to level up small areas of an existing pavement or placed in small irregular areas where the use of a finishing machine is not practical, the finishing machine may be eliminated when authorized by the Engineer, provided a satisfactory surface can be obtained by other approved methods.
4. Flush Structures. Adjacent to flush curbs, gutters, liners, and structures, the surface shall be finished uniformly high so that when compacted it will be slightly above the edge of the curb or flush structure.
5. Conditions for Placement. The asphaltic mixture when placed with a spreading and finishing machine, shall not be placed when the air temperature is below 50°F and is falling, but it may be when the air temperature is above 50°F and is rising. The air temperature shall be taken in the shade away from artificial heat. It is further provided that the asphaltic mixture shall be placed only when the humidity, general weather conditions, and temperature and moisture conditions of the base, in the opinion of the Engineer, are suitable.

G. Compacting

1. It is recommended that the contractor use a control strip shown in Tex-207-F, Part IV, on the first day of production to establish the rolling pattern that will produce the desired density. The costs associated with these services shall borne on by the Contractor.
2. Rolling with the three wheel and tandem rollers shall start longitudinally at the sides and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the rear wheel unless otherwise directed by the Engineer. Alternative trips of the roller shall be slightly different in length. On super-elevated curves, rolling shall begin at the low side and progress toward the high side unless otherwise directed by the Engineer. Rolling with pneumatic-tire roller shall be done as needed. Rolling shall be continued until no further compression can be obtained and all roller makers are eliminated. One tandem roller, one pneumatic-tire roller and at least one three-wheel roller as specified above shall be provided for each job. If the Contractor elects, he may substitute the three-axle tandem roller for the two-axle tandem roller and/or the three when roller; but in no case shall less than three rollers be in use on each job. Additional rollers shall be provided if needed. The motion of the roller shall always be slow enough to avoid displacement of the mixture. If any displacement occurs, it shall be corrected at once using rakes and of fresh mixtures when required. The roller shall not be allowed to stand on pavement which has not been fully compacted. To prevent adhesion of the surface mixture to the roller, the wheels shall be kept thoroughly moistened with water, but an excess of water will not be permitted. All rollers must be in good mechanical condition. Necessary precautions shall be taken to prevent the dropping of gasoline, oil, grease, or other foreign matter on the pavement, either when the rollers are in operation or when standing.

In lieu of the rolling equipment specified, the Contractor may, upon written permission from the Engineer, operate other compacting equipment that will produce equivalent relative compaction as the specified equipment. If the substituted compaction equipment fails to produce the desired compaction as would be expected of the specified equipment, as determined by the Engineer, its use shall be discontinued.

3. Hand Tamping. The edges of the pavement along curbs, headers, and similar structures, and all places not accessible to the roller, or in such positions as will not allow thorough compaction may be compacted using lightly oiled tamps.

- H. Opening to Traffic. The pavement shall be opened to traffic when directed by the Engineer. The Contractor's attention is directed to the fact that all construction traffic allowed on pavement open to public will be subject to the laws governing traffic on Public Roads and Streets.

If the surface ravels or presents a rough appearance, it will be the Contractor's responsibility to correct this condition at his expense. A fog seal and/or sand seal will be applied.

I. Density Test. Acceptance Sampling and Testing of Hot Mix Asphaltic Concrete (Compaction):

Hot Mix Asphaltic Concrete will be accepted for density on a lot basis. A lot will consist of 500 feet of one paving street. One test shall be made for each lot.

Each lot of pavement will be accepted, with respect to density, when the average field density is equal to or greater than 92% of the average maximum theoretical density as determined in accordance with Tex-207-F, and when no individual determination is less than 90% of the average maximum theoretical density. Four field density determinations will be made for each lot. The number of tests will be determined by this specification or by request of the engineer. An asphalt sample specimen shall be provided to the testing laboratory for determining the maximum theoretical density. If heating is necessary, the specimen shall be heated to the lowest temperatures required for proper preparation of the sample.

SLIDING SCALE PAY FACTORS
(DENSITY BASED ON PERCENT OF MAXIMUM THEORETICAL)

| AVERAGE PERCENT DENSITY PAYMENT | RECOMMENDED PERCENT |
|------------------------------------|---------------------|
| 92% or Above | 100 * |
| 90.0 - 91.9 | 90 ** |
| Below 90.0 | Reject *** |

* Average of 4 samples

** If the Owner agrees to accept densities between 90.0-91.9% a seal coat will be required at the costs of the contractor.

*** If the Owner agrees to accept densities below 90.0%, the pay factor for density shall be 50%.

J. Surface Tests. Tests for conformity with the specified crowns and grade shall be made by the Contractor immediately after final rolling. Any variation exceeding the specified tolerances shall immediately be corrected by removing the defective work and replacing with new material, as directed by the Engineer. Any correction required shall be at the sole expense of the Contractor.

For surface course, the finished surface shall not vary more than 1/4 inch (6.3mm), when tested with a 16-foot straightedge applied parallel with, or at right angles to, the centerline.

The finished surfaces of hot mix asphaltic concrete shall not vary from the gradeline, elevations and cross sections shown on the plans by more than 1/2 inch (12.7 mm). The Contractor shall correct pavement areas varying in excess of this amount by removing and replacing the defective work. Skin patching shall not be permitted for correction of low areas nor shall be permitted for correction of high areas.

- K. Sampling Pavement. Samples for determination of thickness and density of completed pavements shall be obtained by the Owner. The size, number, and locations of the samples will be as directed by the Engineer.

All tests necessary to determine conformance with the specified requirements will be performed without cost to the Contractor; however, any required retests shall be performed at the Contractor's cost.

Upon delivery of the Hot Mix Asphaltic Concrete to the site, the Owner will hire a reputable commercial testing laboratory to sample the material and run laboratory tests to verify that the mixture conforms to project specifications (Gradation, Extraction, Hveem Stability and Retained Stability).

END OF SECTION

Section 32 13 13 - CONCRETE PAVEMENT AND FLAT WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This specification covers the requirements for concrete pavement, valley gutters, sidewalks, driveways, curbs and gutters, and handicap ramps. Concrete shall be composed of portland cement concrete and shall be placed in accordance with the lines and grades established by the Engineer and in conformance with the details shown on the plans.

1.2 UNIT PRICES

A. Unit Prices

1. Payment for concrete pavement is on a square foot basis at the thickness shown in the design plans.
2. Payment for concrete valley gutters is on a square foot basis at the thickness shown in the design plans.
3. Payment for sidewalks is on a square foot basis at the thickness shown in the design plans.
4. Payment for curb and gutters is on a linear foot basis at the thickness shown in the design plans. Measurement shall occur along the face of the curb at the gutter line regardless of each cross section.
5. Payment for driveways is on a square foot basis at the thickness shown in the design plans.
6. Payment for handicap ramps is on a per unit basis, regardless of the ramp type installed, as shown in the design plans. Detectable warning systems shall be included in the unit costs of the handicap ramp.

1.3 PRODUCTS

- A. SAND BEDDING: Bedding material shall be placed over approved, limed subgrade, as specified in the drawing details. Sand shall be Bank Run Sand or River Sand, as follows: Durable bank run sand classified as SP, SW, or SM by the Unified Soil Classification System (ASTM D 2487) meeting the following requirements:
 1. Less than 15 percent passing the number 200 sieve when tested in accordance with ASTM D 1140. The amount of clay lumps or balls not exceeding 2 percent.

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2. Material passing the number 40 sieve shall meet the following requirements when tested in accordance with ASTM D 4318:
 - a. Liquid limit: not exceeding 25 percent.
 - b. Plasticity index: not exceeding 7.

Contractor shall provide reports to the Owner and the Engineer from an independent testing laboratory that backfill materials to be placed in the Work meet applicable specification requirements. Contractor shall assist Owner, Owner's representative and Testing Lab in obtaining samples, from the delivered materials, for verification testing.

- B. **CONCRETE:** Concrete shall conform to the details in the plans except as otherwise specified. Concrete shall have a minimum compressive strength of 3000 psi at 28 days or as shown in the design plans. Maximum size of aggregate shall be 1-1/2 inches. In climates where freezing is not a factor but where air entrainment is used in local commercial practice to improve the workability and place ability of concrete, concrete having air content percent of 4-1/2 plus or minus 1-1/2 percent may be specified as Contractor's option to non air-entrained concrete. Mixtures may have air content by volume of concrete of 5 to 7 percent, based on measurements made immediately after discharge from the mixer. The desired slump will be inserted. Suggested limits are 3 inches plus or minus 1 inch for hand placed concrete or for slip formed concrete. The concrete slump shall be 3 inches where determined in accordance with ASTM C 143.
- C. **REINFORCING STEEL:** Provide Grade 60 deformed steel for bar reinforcement in accordance with TXDOT Item 440, "Reinforcing Steel." Provide approved positioning and supporting devices (baskets and chairs) capable of securing and holding the reinforcing steel in proper position before and during paving. Provide corrosion protection when shown on the plans.
- D. **DOWELS:** Provide smooth, straight dowels of the size shown on the plans, free of burrs, and conforming to the requirements of Item 440, "Reinforcing Steel." Coat dowels with a thin film of grease or other approved de-bonding material. Provide dowel caps on the lubricated end of each dowel bar used in an expansion joint. Provide dowel caps filled with a soft compressible material with enough range of movement to allow complete closure of the expansion joint.
- E. **Tie Bars.** Provide straight deformed steel tie bars. Provide either multiple-piece tie bars or single-piece tie bars as shown on the plans. Provide multiple-piece tie bars composed of 2 pieces of deformed reinforcing steel with a coupling capable of developing a minimum tensile strength of 125% of the design yield strength of the deformed steel when tensile-tested in the assembled configuration. Provide a minimum length of 33 diameters of the deformed steel in each piece. Use multiple-piece tie bars from the list of "Prequalified Multiple Piece Tie Bar Producers" maintained by the Construction Division, or submit samples for testing in accordance with Tex-711-I.

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- F. Joint Filler Strips and Sealants: Expansion Joints shall be located at maximum 40 foot spacing. Expansion joint filler shall consist of hard-pressed fiberboard. Joint sealant, cold applied self-leveling shall be a premium grade polyurethane sealant (gray in color) or equal approved by the Engineer.

1.4 CONSTRUCTION METHODS

- A. Placing During Warm Weather: The air temperature of the concrete as placed shall not exceed 95 degrees F except where an approved retarder is used. The mixing water and/or aggregates shall be cooled, if necessary, to maintain a satisfactory placing temperature. In no case shall the placing air temperature exceed 100 degrees F.
- B. FORM WORK: Form work shall be designed and constructed to ensure that the finished concrete will conform accurately to the indicated dimensions, lines, and elevations, and within the tolerances specified. Forms shall be of wood or steel, straight, of sufficient strength to resist springing during depositing and consolidating concrete. Wood forms shall be surfaced plank, 2-inch nominal thickness, straight and free from warp, twist, loose knots, splits or other defects. Wood forms shall have a nominal length of 10 -12 feet. Radius bends may be formed with 3/4-inch boards, laminated to the required thickness. Steel forms shall be channel-formed sections with a flat top surface and with welded braces at each end and at not less than two intermediate points. Ends of steel forms shall be interlocking and self-aligning. Steel forms shall include flexible forms for radius forming, corner forms, form spreaders, and fillers. Steel forms shall have a nominal length of 10 feet with a minimum of two welded stake pockets per form. Stake pins shall be solid steel rods with chamfered heads and pointed tips designed for use with steel forms.
- C. FORM SETTING: Forms shall be carefully set to the indicated alignment, grade and dimensions. Forms shall be held rigidly in place by a minimum of three stakes per form placed at intervals not to exceed 4 feet. Corners, deep sections, and radius bends shall have additional stakes and braces, as required. Clamps, spreaders, and braces shall be used where required to insure rigidity in the forms. Forms shall be removed without injuring the concrete. Bars or heavy tools shall not be used against the concrete in removing the forms. Any concrete found defective after form removal shall be promptly and satisfactorily repaired. Forms shall be cleaned and coated with form oil each time before concrete is placed. Wood forms may, instead, be thoroughly wetted with water before concrete is placed, except that with probable freezing temperatures, oiling is mandatory. Forms for sidewalks shall be set with the upper edge true to line and grade with an allowable tolerance of 1/8 inch in any 10-foot long section. After forms are set, grade and alignment shall be checked with a 10-foot straightedge. Forms shall have a transverse slope [as indicated] 1/4-inch per foot with the low side adjacent to the roadway. Side forms shall not be removed for 18 hours after finishing has been completed.

- D. **CONCRETE PLACEMENT AND FINISHING:** Concrete shall be placed in the forms in one layer of such thickness that when consolidated and finished the sidewalks will be of the thickness indicated. After concrete has been placed in the forms, a strike-off guided by side forms shall be used to bring the surface to proper section to be compacted. The concrete shall be consolidated with an approved vibrator, and the surface shall be finished to grade with a wood float, bull float, or darby, edged and broom finished. After straight edging, when most of the water sheen has disappeared, and just before the concrete hardens, the surface shall be finished to a smooth and uniformly fine granular or sandy texture free of waves, irregularities, or tool marks. A scored surface shall be produced by brooming with a fiber-bristle brush in a direction perpendicular to that of the traffic. All slab edges, including those at formed joints, shall be finished carefully with an edger having a radius of 1/8 inch. Transverse joint shall be edged before brooming, and the brooming shall eliminate the flat surface left by the surface face of the edger. Corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with a properly proportioned mortar mixture and then finished. All slab edges, including those at formed joints, shall be sealed with a rubberized asphalt sealant to control water damage to the subgrade and control of weed and grass growth in the edges and joints.
- E. **Tolerances:** Finished surfaces shall not vary more than 1/4 inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.
- A. **Joints:** Expansion, contraction and sawed joints shall be installed in accordance with Section 32 13 73 – Concrete Paving Joints and Sealants.
- F. **CURING AND PROTECTION:** Concrete shall be protected against loss of moisture and rapid temperature changes for at least 7 days from the beginning of the curing operation. Unhardened concrete shall be protected from rain and flowing water. All equipment needed for adequate curing and protection of the concrete shall be on hand and ready for use before actual concrete placement begins. Protection shall be provided as necessary to prevent cracking of the pavement due to temperature changes during the curing period.
- G. **Protection:** Completed concrete shall be protected from damage until accepted. The Contractor shall repair damaged concrete and clean concrete discolored during construction. Concrete that is damaged shall be removed and reconstructed for the entire length between regularly scheduled joints. Refinishing the damaged portion will not be acceptable. Removed damaged portions shall be disposed of as directed.
- H. **FIELD QUALITY CONTROL:** The Contractor shall perform the inspection and tests described and meet the specified requirements for inspection details and frequency of testing. Based upon the results of these inspections and tests, the Contractor shall take the action and submit reports as required below, and any additional tests to ensure that the requirements of these specifications are met.

- I. **Strength Testing:** The Contractor shall provide molded concrete specimens for strength tests. Samples of concrete placed each day shall be taken not less than once a day nor less than once for every 150 cubic yards of concrete. The samples for strength tests shall be taken in accordance with ASTM C 172. Cylinders for acceptance shall be molded in conformance with ASTM C 31 by an approved testing laboratory. Each strength test result shall be the average of two test cylinders from the same concrete sample tested at 28 days, unless otherwise specified or approved. At least one concrete cylinder should be made to determine an early 7-day strength so further construction can be conducted. Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength, and no individual strength test result falls below the specified strength by more than 500 psi.
- J. **Slump Test:** One slump test shall be made on randomly selected batches of each class of concrete for every 150 cubic yards, or fraction thereof, of concrete placed during each shift. All slump tests are to be done on the middle third of the concrete within the concrete truck. Additional tests will be performed when excessive variation in the workability of the concrete is noted or when excessive crumbling or slumping is noticed along the edges of slip-formed concrete. Additional tests can be requested by the engineer or the testing laboratory at any time of the concrete job.
- K. **Surface Evaluation:** The finished surface of each category of the completed work shall be uniform in color and free of blemishes and form or tool marks. Exposed surfaces of the finished work will be inspected by the Engineer and any deficiencies in appearance will be identified. Areas which exhibit excessive cracking, discoloration, form marks, or tool marks or which are otherwise inconsistent with the overall appearances of the work shall be removed and replaced.

END OF SECTION

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SECTION 32 92 00 - TURFGRASS PLANTING

PART 1 - GENERAL

1.01 SCOPE

- A. This work includes all labor, materials, and equipment for soil preparation, fertilization, planting, and other requirements regarding turfgrass planting areas shown on the plans.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Brownsville PUB Standard Specifications.
- B. Section 31 21 00 – Fine Grading.
- C. Section 32 93 00 - Planting

1.03 SUBMITTALS

- A. Delivery Receipts and Invoices: All delivery receipts and copies of invoices for materials used for this work shall be subject to checking by the Owner or his representative and shall be subsequently delivered to the office of the Owner.
- B. Samples and Producers' Specifications: Various samples, certificates, and specifications of seed, fertilizer and other materials shall be submitted for approval as required by subsequent sections of this specification.

PART 2 - PRODUCTS

2.01 TURFGRASS

- A. Bermudagrass Seed (if specified on plans): Turfgrass seed shall be "Cynodon dactylon" (Common Bermudagrass). seed shall be harvested within one (1) year prior to planting, free of Johnsongrass, field bind weed, dodder seed, and free of other weed seed to the limits allowable under the Federal Seed Act and applicable seed laws. The seed shall not be a mixture. The seed shall be hulled, extra fancy grade, treated with fungicide, and have a germination and purity that will produce, after allowance for Federal Seed Act tolerances, a pure live seed content of not less than 85%, using the formula: purity % times (germination % times plus hard or sound seed%). Seed shall be labeled in accordance with U.S. Department of Agriculture rules and regulations.
 - 1. Certificate Submittal: Prior to planting, provide the Owner or his representative with the State Certificate stating analysis of purity and germination of seed.

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- B. Ryegrass Seed: Turfgrass seed shall be "Lolium multiflorum" (Italian or Annual Ryegrass). The seed shall be harvested within one (1) year prior to planting and shall be free of perennial ryegrass seed, other grass seed, and weed seed to the limits allowable under the Federal Seed Act and applicable seed laws. Seed shall be at least 95% pure and shall have a 90% minimum germination rate.
- C. Certificate Submittal: Prior to planting, provide the Owner or his representative with the State Certificate stating analysis of purity and germination of seed.
- D. Turfgrass Grower: Sod shall be supplied by one (or more) of the following growers, alternative growers must be submitted and approved prior to the bid opening per SECTION 01630 - SUBSTITUTIONS AND PRODUCT OPTIONS.
1. Thomas Turfgrass
Paige, TX
512-988-0600
 2. Legacy Turfgrass
Pleasanton, TX
830-570-3731
 3. Hillside Nursery, Inc.
Georgetown, TX
512-930-1300
 4. Rod Grass Farm
El Campo, TX
979-543-7588
 5. King Ranch Turfgrass
Grandbury, TX
800-388-6112
- E. Sod: Sod shall consist of stolons, leaf blades, rhizomes, and roots with a healthy, virile system of dense, thickly matted roots throughout the soil of the sod for a thickness not less than three-quarters($\frac{3}{4}$) inch. Sod shall be alive, healthy, vigorous, free of insects, disease, stones, and undesirable foreign materials and grasses. The grass shall have been mowed prior to sod cutting so that the height of the grass shall not exceed two (2") inches. Sod shall not be harvested or planted when its moisture condition is so excessively wet or dry that its survival will be affected. All sod is to be harvested, delivered, and planted within a thirty-six (36) hour period of time. Sod shall be protected from exposure to wind, sun, and freezing. If sod is stacked, it shall be kept moist and shall be stacked roots-to-roots and grass-to-grass.
1. Hybrid Bermudagrass - certified "Latitude 36 Bermudagrass" Certificate Submittal: Prior to planting, provide the Owner or his representative with the State Certificate stating analysis of purity hybrid strain.

2. Dimensions: **All sod placed on athletic fields shall have been machine cut in rolls** to uniform soil thickness of one (1") inch plus or minus one-quarter(1/4") inch. All sod shall be of the same thickness. Rectangular sections of sod may vary in length, but all shall be of equal width and of a size that permits the sod to be lifted, handled, and rolled without breaking. Typical roll size shall be 42" wide by 100' long. Broken pads and torn, uneven ends will be unacceptable.
3. Architect/Engineer must approve sod and supplier(s) prior to shipment.

2.02 FERTILIZER

- A. General: Fertilizer shall be a commercial product, uniform in composition, free flowing, and suitable for application with approved equipment. Fertilizer shall be delivered to the site in fully labeled original containers. Fertilizer which has been exposed to high humidity and moisture, has become caked or otherwise damaged making it unsuitable for use, will not be acceptable.
- B. Initial Planting Application: Fertilizer for the initial planting application shall be of N-P-K ratio of 4-5-1 (19-26-5). The phosphorus component must be derived from monoammonium phosphate to stimulate vigorous development of new roots, stolons, and rhizomes. This initial application must be applied and incorporated into the soil immediately prior to sodding or sprigging and applied immediately after seedlings begin to emerge on seeded areas.
 1. Specification Submittal: Submit a sample label or specification of the fertilizer proposed to be used for the Owner's approval.
- C. Post Planting Application: Fertilizer for the post planting application will be a complete fertilizer of chemical base containing by weight the following percentages of nutrients: 27-3-4
+2% Fe (N-P-K) from methylene urea or the nitrogen equivalent of 33-3-10. The application rate should provide 1 lb. of N / 1000 sq. ft.
 1. Specification Submittal: Submit a sample label or specification of the fertilizer proposed to be used for the Owner's approval.

2.03 HYDROMULCH MATERIALS

- A. Mulch: All mulch will be manufactured from hardwoods only and will be refined specifically for turf hydromulch applications. Three approved mulches are manufactured by Conwed, Weyerhaeuser, and Texas Fiber Co.
 1. Submittal: Submit a sample label or specification and a sample packet of the proposed mulch for the Owner's approval.

PART 3 - EXECUTION

3.01 GENERAL

- A. All turfing operations are to be executed across the slope, parallel to finished grade contours.

3.02 SCHEDULE

- A. Any seed areas not established by September 15 shall be seeded with ryegrass upon completion of construction. All ryegrass areas will be tilled under, regraded and Bermuda grass distributed during the time period between April 15 and September 15. The Contractor will be responsible for producing an acceptable stand of Bermuda grass as specified.
- B. Grass planting can proceed only after the fine grading, has been approved by the Architect/Engineer.

3.03 SOIL PREPARATION

- A. **Tillage:** Tillage shall be accomplished to loosen the soil, destroy existing vegetation, and prepare an acceptable seed/sod bed. All areas shall be tilled with a heavy-duty disc or a chisel-type breaking plow, chisels set not more than ten (10") inches apart. Initial tillage shall be done in a crossing pattern for double coverage, then followed by a disc harrow. Depth of tillage shall be five (5") inches.
- B. **Cleaning:** Soil shall be further prepared by the removal of debris, building materials, rubbish, weeds, and stones larger than three-quarter($\frac{3}{4}$ ") inches in diameter.
- C. **Fine Grading:** After tillage and cleaning, all areas to be planted shall be leveled, fine graded, and drug with a weighted spike harrow or float drag. The required result shall be the elimination of ruts, depressions, humps, and objectionable soil clods. This shall be the final soil preparation step to be completed before the commencement of fertilizing and planting.
- D. **Rock Removal:** During the soil preparation process, a "Rock Pick" or other approved piece of machinery shall be used to gather surface stones as small as three-quarter ($\frac{3}{4}$ ") inch in diameter. The Contractor shall be responsible for the disposal of collected materials as waste per "Clean Up," Paragraph 3.12.

3.04 FERTILIZING

- A. **Initial Planting Application:** The fertilizer shall be applied at the rate of nine (9) pounds per one thousand (1000) square feet (400 pounds per acre).
 - 1. **Timing:** The initial planting application of fertilizer for seeded areas shall be applied after the soil preparation, but not more than two (2) days prior to turfgrass planting. Fertilizer shall be applied over sodded areas after planting, but not more than two (2) days later.
- B. **Post Planting Application:** Thirty (30) days after planting, turfgrass areas shall receive the specified post planting fertilizer at the rate of one (1) pound of nitrogen per one thousand (1,000) square feet (45 pounds per acre).

1. Timing: The Owner or his representative will determine if it is too late in the growing season for the post planting application. In the event that it is, the application shall be made in the spring of the next year, or the cost of the application may become a credit due to the Owner.
2. Post Planting Maintenance: See Paragraph 3.9. Areas without a uniform stand (complete coverage) that must be maintained later than thirty (30) days after the initial planting shall receive subsequent applications of fertilizer, as described above, every thirty (30) days until a uniform stand is achieved.

3.05 PLANTING

- A. Seeding: Within two (2) days of soil preparation and initial fertilizing apply Bermuda grass seed at the rate of three (3) pounds per one thousand (1000) square feet (130 pounds per acre)/ryegrass seed at the rate of eight (8) pounds per one thousand (1000) square feet (350 pounds per acre). Seed shall be uniformly placed with a Billion seeder-cultipacker.
- B. Hydromulch Capping: Immediately following seeding operations, all seeded turf areas are to be capped with wood fiber mulch, using conventional "Hydro-Mulch" equipment as manufactured by the Bowie Machine Works, or an approved equal. The hydromulch cap shall be applied at the rate of forty-six (46) pounds per one thousand (1,000) square feet (2,000 pounds per acre), using water at the rate of twenty-three (23) gallons per one thousand (1,000) square feet (1,000 gallons per acre).
- C. Solid Sodding:
 1. Laying sod: Prior to laying the sod, the planting bed shall be raked smooth to true grade and moistened to a depth of three (3") inches, but not to the extent causing puddling. The sod shall be laid smoothly, tightly butted edge to edge, and with staggered joints.
 2. Rolling: The sod shall be pressed firmly into contact with the sod bed by rolling so as to eliminate all air pockets, provide a true and even surface, and insure knitting without displacement of the sod or deformation of the surfaces of sodded areas. All transitions between sod and existing turf areas shall be undercut and rolled to provide a smooth, level transition.
 3. Smoothing: Following compaction, fine screened soil of good quality shall be used to fill all cracks between sod sections. Excess soil shall be worked into the grass with suitable equipment and shall be well watered. The quantity of fill soil shall be such that it will cause no smothering of the grass.
 4. Topdressing (Required on athletic fields only.): Approximately one week after initial planting of sod the entire sodded area shall be mowed to a height of one (1") inch, then topdressed with a fine sandy loam material that is similar to the topsoil on the field. Topdressing shall be applied at a rate of approximately 0.3 cubic yards per thousand square feet, (0.1" deep). Subsequently, the topdressing shall be worked in and smoothed over with a flexible steel drag mater by brushing.
 5. Topdressing and/or rolling shall be repeated at no cost to the owner if the A/E determines additional smoothing is required.

3.06 PROTECTION

- A. No heavy equipment shall be moved over the planted turf area unless the soil is again prepared, graded, leveled, and replanted. It will be the responsibility of this Contractor to protect all paving surfaces, curbs, utilities, plant materials, and any other existing improvements from damage. Any damages shall be repaired or replaced at no cost to the Owner. This Contractor will also locate and stake all irrigation heads, valve risers, etc., prior to beginning any soil preparation work.

3.07 IRRIGATION SYSTEM (if applicable)

- A. The proposed irrigation system must be complete in all respects and must be completely operational before turfgrass planting may begin. After planting, any breakdowns in the irrigation system attributable to warranty items must be immediately repaired by the Contractor. Otherwise, the cost of replacing the lost turf caused by the Contractor's failure to promptly repair the irrigation system will be fully borne by the Contractor.
- B. All turf areas not covered by the proposed irrigation systems must be irrigated with a temporary above-ground irrigation system. The above-ground temporary irrigation system shall remain in place until all non-irrigated turf areas have established an acceptable stand of turfgrass. Contractor shall be responsible for installation, operation and removal of the temporary system. All cost associated with the temporary system shall be borne by the Contractor.

3.08 WATER (Refer to Special Conditions if applicable).

3.09 ESTABLISHMENT AND ACCEPTANCE

- A. Regardless of unseasonable climatic conditions or other adverse conditions affecting planting operations and the growth of the turfgrass, it shall be the sole responsibility of the Contractor to establish a uniform stand of turfgrass as herein specified. When adverse conditions such
as drought, cold weather, high winds, excessive precipitation, or other factors prevail to such an extent that satisfactory results are unlikely, the Owner may, at his own discretion, stop any phase of the work until conditions change to favor the establishment of turfgrass.
- B. A uniform stand with complete coverage of the specified grass in seeded areas shall be defined as not less than 80% coverage in a ten-foot square area. Growing plants shall be defined as healthy grass plants of two blades or more at least 1 ½" inches tall.
- C. Complete coverage of sodded areas shall be defined as no visible joints showing or felt between individual sections of sod and all sections of sod must be firmly rooted to the prepared subgrade.

3.10 POST-PLANTING MAINTENANCE

- A. Maintenance shall begin immediately after each grass area is planted. All planted areas will be protected and maintained by watering, weed control, and replanting as necessary for at least thirty (30) days after initial planting and for as long as necessary to establish a UNIFORM STAND OF THE SPECIFIED GRASS and until the entire project has been accepted by the Owner. It is anticipated that a minimum of eight (8) mowings will occur before the grass are accepted by the Owner. All areas which are not completely covered with the specified grass at the end of thirty (30) days will continue to be replanted and maintained by the Contractor until complete coverage and acceptance are achieved.
8. Water: Apply, at a minimum, one-half (½") inch of water over the entire planted area every three days unless sod area is saturated or showing distress from overwatering conditions. Contractor shall regulate water cycle and turf condition daily until final acceptance of the project.
- C. Mowing:
1. Athletic Fields: Once grass is established the planted area shall be mowed at least twice a week with a "reel" type mower during the growing season. Grass shall be mowed to a height of one (1) inch. Mowing during dormant season will be done as necessary. **Contractor shall include at least eight (8) mowings in his bid.**
 2. Areas Outside Athletic Fields: Once grass is established the planted area shall be mowed at least once a week during the growing season. Grass shall be mowed to a height of two (2") inches. Mowing during dormant season will be done as necessary. **Contractor shall include at least two (2) mowings in his bid.**
- D. Weed Control: No sooner than 45 days after grass has germinated any weed growth shall be arrested by applying MSMA broadcasted over the entire planted area. Additional applications of MSMA will be required to eliminate weed growth that continues to grow after the initial application. MSMA will only be used during the growing season. All weed growth during the dormant season will be controlled with spot applications of "Round-Up." "Round-Up" will not be used until the grass is totally dormant.
- E. Replanting: All areas that do not produce a UNIFORM STAND OF GRASS must be replanted until a UNIFORM STAND OF GRASS is established.
- F. Edging: All turf areas adjacent to paved areas shall be edged to maintain a neat appearance.

3.11 GRADING

- A. All grading and placing of topsoil on any given area will be done prior to the turfgrass installation. It will be this Contractor's responsibility to maintain the existing grades and leave them in a true and even condition after planting turfgrass.

3.12 EROSION CONTROL

A Throughout the project and the maintenance period for turfgrass, it is the Contractor's responsibility to maintain the topsoil in place at specified grades. Topsoil and turfgrass losses due to erosion will be replaced by the Contractor until establishment and acceptance is achieved.

3.13 CLEAN UP

A This Contractor shall remove any excess material or debris brought onto the site or unearthed as a result of his turfgrass operations.

3.13 GUARANTEE

A This Contractor shall guarantee all materials used for this work to be the type, quality, and quantity specified.

END OF SECTION

Section 32 92 19.10 - NATIVE GRASS SEEDING FOR EROSION CONTROL

1.1 Description

This item shall govern the preparation of a seed bed to the lines and grades indicated on the Drawings, sowing of seeds, fertilizing, mulching with straw, cellulose fiber wood chips, recycled paper mulch and other management practices along and across such areas as indicated in the Drawings or as directed by the Landscape Architect or designated representative.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, inch-pound units are given preference with SI units shown within parentheses.

1.2 Submittals

The submittal requirements for this specification item shall include:

- A. Identification of the type, source, mixture, PLS and rate of application of the seeding.
- B. type of mulch.
- C. type of tacking agent.
- D. type and rate of application of fertilizer.

1.3. Materials

- A. Seeds. All seed must meet the requirements of the Texas Seed Law including the labeling requirements for showing pure live seed (PLS), name and type of seed. The seed furnished shall be of the previous season's crop and the date of analysis shown on each bag shall be within nine months of the time of delivery to the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety of seed shall be furnished for analysis and testing when directed by the Landscape Architect or designated representative.

The amount of seed planted per acre (hectare) shall be of the type specified in sections 604S.6.

- B. Water. Water shall be clean and free of industrial wastes and other substances harmful to the growth of grass or the area irrigated.
- C. Straw Mulch or Hay Mulch. Straw Mulch shall be oat, wheat or rice straw. Hay mulch shall be prairie grass, Bermuda grass, or other hay approved by the Landscape Architect or designated representative. The straw or hay shall be free of Johnson grass or other noxious weeds and foreign materials. It shall be kept in a dry condition and shall not be molded or rotted.
- D. Tacking Agents. The tacking agent shall be a biodegradable tacking agent, approved by the Landscape Architect or designated representative.

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- E. Cellulose Fiber Mulch (Natural Wood). Cellulose Fiber Mulch shall be natural cellulose fiber mulch produced from grinding clean whole wood chips. The mulch shall be designed for use in conventional mechanical planting, hydraulic planting of seed or hydraulic mulching of grass seed, either alone or with fertilizers and other additives. The mulch shall be such, that when applied, the material shall form a strong, moisture-retaining mat without the need of an asphalt binder.
 - F. Recycled Paper Mulch. Recycled paper mulch shall be specifically manufactured from post-consumer paper and shall contain a minimum of 85% recycled paper content by weight, shall contain no more than 15% moisture and 1.6% ash, and shall contain no growth inhibiting material or weed seeds. The recycled paper mulch shall be mixed with grass seed and fertilizer for hydro-seeding/mulching, erosion control, and a binder over straw mulch. The mulch, when applied, shall form a strong, moisture-retaining mat of a green color without the need of an asphalt binder.

1.4 Construction Methods

- A. Preparing Seed Bed. After the designated areas have been rough graded to the lines, grades and typical sections indicated in the Drawings or as provided for in other items of this contract and for any other soil area disturbed by the construction, a suitable seedbed shall be prepared. Contractor to scarify the ground surface to a minimum 4" depth remove all sticks, trash, rocks and other debris and dispose off site prior to seeding/sodding. When solid rock is exposed or encountered within the first 2" depth of existing soil, place a minimum of 4" imported topsoil or approved salvaged topsoil, cultivated and rolled sufficiently to reduce the soil to a state of good tilth, when the soil particles on the surface are small enough and lie closely enough together to prevent the seed from being covered too deeply for optimum germination. Areas that become crusted shall be reworked to an acceptable condition before sodding. The optimum depth for seeding shall be 1/4 inch (6 millimeters). Water shall be gently applied as required to prepare the seedbed prior to the planting operation either by broadcast seeding or hydraulic planting. Seeding shall be performed in accordance with the requirements hereinafter described.
- B. Watering. All watering shall comply with City Ordinances. Broadcast seeded areas shall immediately be watered with a minimum of 5 gallons of water per square yard (22.5 liters of water per square meter) or as needed and in the manner and quantity as directed by the Landscape Architect or designated representative. Hydraulic seeded areas and native grass seeded areas shall be watered commencing after the tackifier has dried with a minimum of 5 gallons of water per square yard (22.5 liters of water per square meter) or as needed to keep the seedbed in a wet condition favorable for the growth of grass.

Watering applications shall constantly maintain the seedbed in a wet condition favorable for the growth of grass. Watering shall continue until the grass is uniformly 1 1/2 inches (40 mm) in height and accepted by the Landscape Architect or designated representative. Watering can be postponed immediately after a 1/2 inch (12.5 mm) or greater rainfall on the site but shall be resumed before the soil dries out.

1.5 Non-Native Seeding [NOT USED]

1.6 Native Grass Seeding

The seedbed shall be prepared as specified above.

Seed supplier: Native American Seed, Junction, Texas
800-728-4043 www.seedsource.com
(no approved equals accepted)

The seed mixture and the rate of application shall be as follows:

- A. Method A - Broadcast Seeding. The seed or seed mixture in the quantity specified shall be uniformly distributed by mechanical methods over the prepared seed bed areas indicated on the Drawings or where directed by the Landscape Architect or designated representative. Seed and fertilizer may be distributed at the same time, provided that each component is uniformly applied at the specified rate. After planting, the planted area shall be rolled with a corrugated roller of the "Cultipacker" type. All rolling of sloped areas shall be on the contour.

Seed Mixture and Rate of Application for Broadcast Seeding: Thunder Turf –Seeding Rate
130 pounds per 1 acre.

Fertilizer shall be a pelleted or granular slow release with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of 1 pounds per 1000 square feet.

Mulching shall immediately follow seed and fertilizer application as required.

1.7. Mulch

A. Straw Mulch

Straw mulch shall be spread uniformly over the area indicated or as designated by the Engineer or designated representative at the rate of 2 to 2 1/2 tons of straw per acre (4.5 to 5.6 megagrams of straw per hectare). The actual rate of application will be designated by the Landscape Architect or designated representative. Straw may be hand or machine placed and adequately secured.

B. Fiber Mulch

Cellulose and wood fiber mulch shall be spread uniformly over the area indicated or as designated by the Landscape Architect or designated representative at the rate of 45 to 80 lbs. per 1000 square feet (22 to 39 kilograms per 100 square meters), with tackifier at a rate of 1.4 pounds per 1000 square feet.

C Recycled Paper Mulch

Recycled paper mulch shall be spread over the area indicated on the Drawings or as designated by the Landscape Architect or designated representative at a rate that will provide 100% coverage.

D. Shredded Brush Mulch

Small brush or tree limbs except Juniper, which have been shredded, may be used for mulching Native Grass seeding.

END OF SECTION

SECTION 32 93 00 PLANTING PART

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

The requirements of the "General Conditions of the Contract" and General Requirements, shall apply to all work of this Section with the same force and effect as though repeated in full herein.

1.02 SCOPE OF WORK

Furnish all labor, material, equipment and services necessary to provide all landscape planting, complete in place, as shown on drawings and/or specified herein.

1.03 QUALITY ASSURANCE

A. Source Quality Control:

1. Submit documentation to Project landscape architect within fifteen (15) days after award of Contract that all plant material is available and has been purchased, contracted to be grown, or reserved. Contractor shall be responsible for all material listed on plant list. Any and all substitutions due to unavailability must be requested in writing prior to commencement of installation. All materials shall be subject to inspection by Project Land- scape Architect at any time after confirmation of ordering.
2. Plants shall be subject to inspection and approval of Project landscape architect at place of growth or upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the work. Plant materials ap- proved by the Project Landscape Architect shall be tagged with non-removable tags sup- plied by contractor with the project name. Tags shall remain until approval and acceptance of plant material on site.
3. Inspection and tagging of plant material by the Project Landscape Architect is for design intent only and does not constitute the Project Landscape Architect's approval of the plant materials in regards to their health and vigor as specified in Section 2. The health and vigor of the plant material is the sole responsibility of the Contractor.
4. The Contractor shall submit samples and/or specifications of any item being used on site as listed in section 2 herein.
5. Applicable standards for plant material shall be:
 - a. American Standard for Nursery Stock, latest edition.
 - b. American Joint Committee on Horticultural Nomenclature, latest edition.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery

1. Deliver fertilizer and other packaged materials to site in original unopened containers bearing manufacturers guaranteed chemical analysis, name, trademark, and conformance to State Law.

The Contractor shall furnish Project Landscape Architect with copies of receipts for all amendments specified in this Section.

2. Deliver all plants with legible identification labels stating proper botanical names and sizes indicated on plant list.
3. Protect plant material during delivery to prevent damage to root ball, trunks or branches, or desiccation of leaves.
4. The Contractor shall notify the Project Landscape Architect seven (7) days in advance of delivery of all plant materials and shall submit an itemized list of the plants in each delivery.
5. Department of Agriculture certificate shall accompany all grass seed and each delivery of sod used for solid sod or plugging to certify genetic identity and shall be furnished to the Owner.

B. Storage:

1. Maintain and protect plant material, including solid sod, not to be planted within twenty-four (24) hours in a healthy, vigorous condition.
2. Store plant material, including solid sod, in shade and protect from weather. Contractor to provide all water and protection necessary to keep plant material from freezing or drying.
3. Tree delivery and installation shall be coordinated such that they are completed on the same day. Should planting be unavoidably delayed, Contractor shall protect rootballs with a covering material such as sand or mulch, keeping trees in an upright or inclined manner, or other manner acceptable to the Project Landscape Architect.

C. Handling:

1. The Contractor is cautioned to exercise care in handling, loading, unloading and storing of plant materials. Plant materials that have been damaged in any way will be discarded and if installed, shall be replaced with undamaged materials at the Contractor's expense.
2. Under no circumstances is plant material to be handled by stem or trunk. All trees are to be handled with flexible straps secured around rootball.
3. Contractor to protect tree trunks and tree limbs from damage during planting with carpet or burlap strips.

1.05 JOB CONDITIONS

- A. Work continuously on the site with exception of bad weather delays until the project is completed and as called for in the General Conditions.
- B. Schedule: Install trees, shrubs, and liner stock plant material before lawn installation has commenced. Contractor to coordinate work with all other trades as stated in General Conditions.

1.06 GUARANTEE AND REPLACEMENT

- A. All plant material installed under the Contract shall be guaranteed to remain alive and in healthy, vigorous condition for a period of one year after date of written Final Acceptance of project landscape installation.
- B. Replace all plant materials that are dead, dying, unhealthy or unsightly as determined by the Project Landscape Architect. Replacements shall be in accordance with the drawings and specifications and shall be guaranteed as set forth in Section A above. The cost of replacements is at the Contractor's expense. Material is to be replaced within fifteen (15) days of written notice by Owner or Project Landscape Architect.
- C. Warranty shall not include damage or loss of plants due to acts of God, theft, fire, acts of vandalism, or negligence on the part of the Owner, as determined by the Project Landscape Architect.
- D. Contractor shall remove all staking, guying and wrapping materials at the end of the guarantee period.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: All materials shall be of standard, approved and first-grade quality and shall be in prime condition when installed and accepted. Any commercially processed or packaged material shall be delivered to the site in the original unopened container bearing the manufacturer's guaranteed analysis. Contractor shall supply Project Landscape Architect with a sample of all supplied materials accompanied by analytical data from an approved laboratory source illustrating compliance or bearing the manufacturer's guaranteed analysis. Contractor shall submit a list and manufacturer's product information, including MSDS sheets, of all chemicals to be used on site to Owner for approval prior to any chemical application.
- B. Organic Amendment to be composted mulch as manufactured by "Garden-Ville", "Living Earth Technology", or approved equal. Submit sample and analysis for approval.

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- C. Soil Amendments:
1. Soil sulfur: Agricultural grade sulfur containing a minimum of 99% sulfur (expressed as elemental).
 2. Iron sulfate: 20% Iron (expressed as metallic iron), derived from ferric and ferrous sulfate, 10% sulfur (expressed as elemental).
 3. Gypsum: Agricultural grade product containing 98% minimum calcium sulfate.
 4. Pre-Emergent Herbicide: Surflan or approved equal.
- D. Fertilizer: EZ-Green slow release tablets, percentages by weight, (Nitrogen, Phosphoric acid, Potash), mixed by a commercial fertilizer supplier. Fertilizers for lawns shall be slow release fertilizers. Submit samples to Project Landscape Architect for approval.
- E. Import Topsoil (General areas): Contractor to supply high quality imported topsoil of loamy character, high in humus and organic content from local agricultural source. Topsoil to be reasonably free from clay lumps, coarse sands, stones, roots, and other foreign matter. There shall be no toxic amounts of acid or alkaline elements. Red or Orange "sandy loam" will not be acceptable. Submit samples to Project Landscape Architect for approval.
- F. Plant Material: Plants shall be in accordance with the Texas State Department of Agriculture's regulation for nursery inspections, rules and rating. All plants shall have a normal habit of growth and shall be full, well branched, well-proportioned and symmetrical. Plants shall be sound, healthy, vigorous and free of insect infestations, plant diseases, sunscalds, and fresh abrasions of the bark, excessive abrasions, or other objectionable disfigurements. Tree trunks shall be sturdy and have well shaped branching systems and vigorous and fibrous root systems that are not root or pot-bound. The Project Landscape Architect reserves the right to examine the roots of any plant material he determines questionable. Samples to be chosen randomly and shall be at Contractor's expense.
1. Nursery Grown and Collected Stock: All material shall have been grown under climatic and soil conditions similar to those in locality of project. Container-grown stock shall be in vigorous, healthy condition, not root-bound or with root system hardened off, and shall have grown in container from seedling. Containerized stock shall be in vigorous, healthy condition, not root-bound or with root system hardened off and shall have grown in container for a minimum of 8 months. Use only liner stock plant material that is well established in removable containers or formed homogeneous soil sections.
 2. All ball and burlap trees shall have firm, natural root balls or sufficient size to encompass the fibrous and feeding root system necessary for full recovery and establishment of the plant. Cracked or soft or "mushroomed" rootballs will be unacceptable. Ball size shall conform to the latest edition of the American Standard for Nursery Stock. B&B materials shall be firmly wrapped with biodegradable burlap.
 3. Specimen Stock: When detailed on the Plant List, specimen shall mean exceptionally fully developed, bushy, and heavily branched plants that have been grown individually in the nursery. They shall surpass the normal standard for nursery stock in their density and maturity, and shall form a symmetrical, tightly knit plant or picturesque characteristic if indicated.

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- G. Lawn Seed: All seed used shall be high quality, extra fancy, treated lawn type seed at the purity and germination specified, and shall be furnished in sealed standard containers with signed copies of a statement from the vendor certifying that each container of seed delivered is fully labeled in accordance with the Texas State Agricultural Code and is equal to or better than the requirements of these specifications. Lawn seed to be free of weed or noxious grass seeds. Submit sample and analysis for approval.
 - H. Sodding: Refer Specification 32-9000 – Turfgrass Planting
 - I. Native Grass Seeding for Erosion Control: Refer Specification 02932-N
 - J. Guying and Staking Materials: Reference plans for tree staking details that apply to portions of the project.
 - 1. Stake trees as specified on landscape details.
 - K. Tree Paint: Morrison Tree Seal, Cabort Tree Paint, or approved equal.
 - L. Water: Furnished by Owner on site through irrigation system at hose bib locations; all hoses, transportation across site and other necessary distribution to be provide by Contractor. If irrigation system is not functional or part of contract upon completion of planting, provide what- ever means necessary to ensure that all material is watered and maintained.
 - M. Mulch:
 - 1. Tree and Pit Planted shrubs: Mulch shall consist of shredded cedar or hardwood mulch mixture of varied lengths (1"-3") such that when installed will form a mat resistant to erosion. Mulch to be partially decomposed and shall be free of sticks, stones, clay or other foreign materials.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Obtain Owner's certifications that rough grades to plus or minus 0.10' have been established prior to commencing planting operations. Provide for inclusion of all amendments, settling, etc. Landscape Contractor shall be responsible for shaping and fine grading all planting areas indicated on plans or as directed by Project Landscape Architect.
- B. Verify location of all utilities prior to pit excavation and grading. Contractor is responsible for any damage to utilities and Owner's property. Coordinate with all other site contractors.
- C. Inspect trees, shrubs and liner stock plant material for injury, insect infestation and trees and shrubs for improper pruning. Do not begin planting of trees until deficiencies are corrected or plants replaced.
- D. Quantities shown on the plans are for the convenience of the Contractor. In case of discrepancy between the plant list and the plans, the plans shall govern. The Contractor is also re- sponsible for determining the quantities needed to complete the installation to the full extent dimensioned on the drawings.

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- E. An automatic underground irrigation system may be part of the Contract. Contractor may coordinate the work to allow for the use of the system to irrigate the work in progress. Failure to adequately coordinate the work shall not relieve the Contractor of the need to provide water to landscape material up until Final Acceptance of the work.

3.02 PREPARATION

A. Soil Preparation:

1. Grades: Contractor to receive site at approximately finish grade unless otherwise noted on plan. Minor modifications to grade may be required by Contractor to establish final grade. Contractor will be responsible for removal of minor rocks and debris.
2. Soil Testing: The Owner and Project Landscape Architect reserve the right to require soil testing and results listing pH, fertility levels and percentages of sand, silt, and clay. From this, the contractor may be required to submit to the Owner and Project Landscape Architect recommendations for soil amendments and fertilizers if different than those listed below. For bid purposes, use the soil amendment procedures listed.

B. Excavation:

1. Continuous planting beds, depth of excavation:
4 - 8 inches minimum below finish grade
One-gallon shrubs - 12 inches minimum below finish grade
Five-gallon shrubs - 16 inches minimum below finish grade
2. Tree and shrub pit dimensions:
depth: 1-1/2 times the root ball (vertical sides)
width: 1 foot wider than the diameter of the rootball
3. All excess soil excavated from beds to be disposed of in a lawful manner off site unless by written consent, the Project Landscape Architect directs the Contractor to supplement lawn area with approved excavated soil or provides a spoil disposal area on site.
4. Contractor shall fracture and break rock or clay if encountered in excavation and perform a drainage test. The tree, shrub, or planting pits shall be filled with water and shall drain completely within a 24-hour period to be acceptable for planting. Notify Project Landscape Architect upon such occurrences.
5. Contractor to scarify bottom and sides of pit to ensure that glazing of clay pit does not occur. Contractor to be responsible to provide adequate drainage through shrub beds to prevent water logging of plants. Notify Project Landscape Architect if inadequate drainage in shrub beds occurs.

C. Backfill Mix for planting is to be provided; the standard plant bed mix as manufactured by "Living Earth Technology", "Gardenville" or approved equal.

1. Contractor to provide 48 hours' notice to Project Landscape Architect prior to mixing of any soil on site for approval of amendments and mixed soil.

2. If soils are mixed off site, contractor shall submit location of pre-mix and mix analysis for Project Landscape Architect.

D. Pre-Plant Weed Control:

1. Spray weeds with a nonselective systemic contact herbicide, as recommended and applied by an approved licensed applicator.
2. Clear and remove these existing weeds upon herbicide's completed action by grubbing off all plant parts at least 1/2" below the surface of the soil.

3.03 PLANT INSTALLATION

A. Coordination:

1. If part of contract, Contractor to coordinate with Irrigation Contractor to insure functional irrigation system prior to any tree, shrub and groundcover installation.

B. Layout of Major Plantings: Tree locations and outlines of planting beds shall be marked on the ground by the Contractor before any plant pits are dug. The Project Landscape Architect shall approve all such locations. If underground construction or utility line is encountered in the excavation of planting areas, other location for planting may be selected by the Project Landscape Architect.

C. Planting of Trees and Shrubs:

1. Protect all areas from excessive compaction when trucking plants or other material to the planting site. Protect existing site amenities during landscape operations.
2. Removal of containers:
 - a. Remove bottom of plant boxes before planting. Remove sides of box without damage to root ball after positioning plant and partially backfilling.
 - b. Remove top 1/3 of burlap from balled and burlap materials after setting plant.
 - c. Remove all plastic fabrics, containers, ropes and wires from shrub and tree canopies and root balls.
3. All plants shall be set upright and plumb in center of hole. Plants or trees in formal plantings shall be laid out according to dimensions on plans. Plants shall be set to give best appearance. All plants shall be set slightly above (no more than 2"), or level with finished grade up- on completion of planting operations. Adjust tree and shrub elevations should settlement occur.
4. Backfill pits immediately upon setting until hole or trench is one-half full. Hole should then be filled with water and tamped sufficiently to remove any air pockets.

5. Plant Tablets:

- a. After the water has completely drained, planting tablets shall be placed as indicated below:

Three tablets per 15-gallon container
Four tablets per 24" box or 2" tree
Five tablets per 30" box or 3" tree
Six tablets per 36" box or 4" tree
Seven tablets per 42" box or 5" tree
Eight tablets per 48" box or 6" tree

Planting tablets shall be set with each plant on the top of the root ball while the plants are still in their containers so the required number of tablets to be used in each hole can be easily verified by the Project Landscape Architect.

6. Complete backfilling operations. Construct a 4" ht. water retention basin around plant pit with topsoil. Apply pre-emergent herbicide. Spread minimum 3" deep specified mulch within tree basins and all pit planted shrubs. Spread minimum 3" deep specified mulch within all planting beds.
7. Pruning: Trees shall be pruned and thinned out if there are too many internal branches. The trees should be open to allow more sunlight into the entire tree and too shape the tree. Weak crouches are to be removed. Remove dead or injured twigs and branches. Pruning may not be done prior to delivery of plants. Cuts over 3/4" in diameter shall be painted with specified tree paint. Trees that do not have a central leader will be rejected.
8. Staking: Staking of all trees shall be completed immediately after planting. All stakes shall be installed plumb and as indicated in details.
9. Planting of Shrubs (mass), ground covers and annuals:
- a. After excavation and scarification of planting bed, Contractor to fill bed with 4" specified backfill mix and apply Agricultural Gypsum at the rate of 50 lbs./1000 S.F. complete backfilling with specified mix to finished grade. Edging, if specified, shall be installed at this time.
- b. Plants shall be installed in straight rows and evenly spaced to fill bed, unless otherwise noted, and at intervals called out in the drawings. Triangular spacing shall be used unless otherwise noted on the drawings.
- c. After installation of all shrubs, groundcover and annuals, plantings shall be watered thoroughly. Any settling of plants or finished grade that occurs shall be repaired prior to installation of mulch. Finished grade of planting beds to be 1/2" below finished grade of adjacent pavement or curb.
- d. After water has drained from planting, but not more than 24 hours later, Contractor to apply pre-emergent weed control according to manufacturer's specifications.
- e. Following pre-emergent weed control applications, Contractor to install specified mulch to full 3" depth over entire bed area.

3.04 LAWN APPLICATION

A. Coordination:

1. Install hydromulch, plug or sod after tree, shrub and groundcover installation is complete.
2. If part of contract, Contractor to coordinate with Irrigation Contractor to insure functional irrigation system prior to any lawn installation.

B. Preparation:

1. Pre-Plant Weed Control:
 - a. If weeds exist within proposed landscape areas at the beginning of work, spray with a nonselective systemic contact herbicide, as recommended and applied by an approved licensed applicator.
 - b. Clear and remove these existing weeds upon herbicide's completed action by grubbing off all plant parts at least 1/2"-1" below the surface of the soil.
2. Contractor to scarify ground surface to a minimum 2" depth remove all sticks, trash, rocks and other debris and dispose off site prior to seeding/sodding. When solid rock is exposed or encountered within the first 2" depth of existing soil, place a minimum of 4" imported topsoil. All proposed berms shall have a minimum of 4" imported topsoil.
3. Contractor to rake entire area, leveling any imperfections in the grades left by site work contractor. Landscape contractor to ensure that there will be positive drainage and no ponding on site. Finished grade of lawn areas to be 1/2" below top of curbs, sidewalks and other pavements. Remove any large (greater than 1") dirt clods, rocks, and trash and prepare a smooth, level, loose and coarse surface. Project Landscape Architect to approve fine grading prior to any lawn installation. Lawn bed shall be moist (but not muddy) to receive seed, sod and plugs.

C. Hydromulch Application (when applicable):

1. Lawn areas to be seeded immediately after preparation of the bed. Do not use pre-emergent herbicide in areas to be seeded. Apply a uniform coat of hydromulch at the rates specified in: Native Grass Seeding for Erosion Control: Refer Specification 02932-N, Non-Native Grass Seeding for Erosion Control: Refer Specification 02932-NN, Native Grass and/or Wildflower Seeding for Erosion Control: Refer Specification 02932-NW.
2. Seed areas within seeding limits indicated on the plan and areas disturbed by construction operations.
3. Protect existing utilities (including irrigation system), plantings, paving and other site amenities from damage caused by hydromulching operations.
4. Immediately following application of hydromulch, the Contractor shall wash excess hydromulching material from previously planted materials, architectural features, etc. Care shall be exercised to avoid washing or eroding mulch materials from lawn area.

D. Sod Installation (if required):

1. Incorporate specified starter fertilizer at 2 pounds Nitrogen per 1000 square feet of lawn area for sodded areas.
2. Apply specified pre-emergent herbicide to fine graded areas prior to installation of solid sod. Do not use any Pre-emergent in areas to be overseeded with Rye Grass within three months. Use care to avoid wind drift or runoff to adjacent ornamental tree or shrub plantings.
3. Lay sod within 24 hours from time of harvesting.
4. Lay sod to form solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work sifted soil into minor cracks between pieces of sod; remove excess sod to avoid smothering adjacent grass.
5. Sod pads shall be of fullest size possible-no sod slivers or scraps will be permitted.
6. Finished grade of new sod shall be flush with adjacent lawn and pavement. Ensure positive drainage off all adjacent walkways and pavement.
7. Roll entire sodded area with sod roller. Water sod thoroughly.

3.05 CLEAN-UP

- A. After all planting operations have been completed; remove all trash, excess soil, empty plant containers and rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a neat and orderly condition throughout the site. Contractor shall pick up all trash resulting from this work no less frequently than each Friday before leaving the site, once a week, and/or the last working day of each week. All trash shall be removed completely from the site.
- B. The Contractor shall leave the site area broom-clean and shall wash down all paved areas within the Contract area, leaving the premises in a clean condition. All walks shall be left in a clean and safe condition.

3.06 MAINTENANCE

A. General:

1. Maintain plant materials and lawn areas until final acceptance of the project.
2. Correct defective work as soon as apparent or as directed by Project Landscape Architect.
3. All debris (including clippings, leaves, etc.) shall be removed from project site.
4. Coordinate with irrigation contractor to ensure functional irrigation system. Notify Project landscape architect should any conflicts arise. Hand water all areas that do not have automatic irrigation system until fully established.

B. Trees, Shrubs, Groundcover and Annuals:

1. Maintenance shall include litter removal, watering, pruning, fertilizing, weeding and the application of appropriate herbicides, insecticides, and fungicides as necessary. Under no conditions shall shrubs be sheared (unless Contractor obtains written consent of Owner).
2. Corrective measures - tighten and repair guying and staking work, reset settled plants, re-mulch in order to maintain specified depths of mulch.

C. Lawn Areas:

1. Maintain lawn areas, including watering, fertilizing, rolling, weeding, and application of appropriate insecticides, herbicides and fungicides, and reseeding, plugging or sodding per plan until a full uniform stand of specified grass is achieved.
2. Repair, re-grade and reseed/replug/resod washed out or bare areas as required per original plan.

3.07 ACCEPTANCE

- A. The landscape will be reviewed provided all work is in compliance with specifications and drawings and all plants and lawns are in healthy vigorous condition. Inspection to determine substantial completion of planted areas and lawns will be made by Project Landscape Architect upon Contractors request.
- B. Substantial Completion will be granted when all plant material has been installed, hydromulching and sodding has been completed, and clean up on site has occurred.
- C. Final Acceptance will be granted when:
 1. All trees planted on site that are deemed unacceptable have been replaced and a fresh layer of mulch has been installed in all mulch beds.
 2. All shrubs and groundcovers planted on site that are deemed unacceptable have been replaced and a fresh layer of mulch has been installed in all bed areas disturbed by replacements.
 3. Seeded or plugged lawns shall be considered acceptable when established grass has grown at least 1-1/2 inches high with cover exceeding 95% of lawn area and no bare spots greater than two (2) square feet exist. Lawn areas not meeting these criteria shall be repaired with original materials/methods specified on plans. Provide re-grading as necessary.
 4. All items listed on punch lists and field reports have been completed.

3.08 EXPIRATION OF GUARANTEE PERIOD

The Contractor shall be responsible for notifying the Owner 30 days prior to the expiration of the guarantee period (see section 1.06, A). The Contractor shall coordinate a meeting at such time with the Owner to inspect all plant material for its health. All plant material deemed dead or unhealthy is to be replaced at the contractor's expense and shall be guaranteed for a time period equal to that of the original guarantee. Contractor shall remove and dispose of all staking, guying and wrapping materials at the end of the guarantee period.

END OF SECTION

Section 33 05 13 - ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Adjusting elevation of manholes, inlets, and valve boxes to new grades.

1.2 UNIT PRICES

- A. Unit Prices.

- 1. No separate payment will be made for work performed under this Section. Include cost of such work in Contract unit prices for items listed in bid form.

1.3 REFERENCE

- A. ASTM C 270 - Specification for Mortar for Unit Masonry.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. For cast in place concrete, conform to requirements to Section 33 05 16 - Concrete for Utility Construction.
- B. For mortar mix, conform to requirements of ASTM C 270, Type S, using Portland Cement.

2.2 CAST-IRON FRAMES, GRATES, RINGS AND COVERS

- A. For cast-iron frames, grates, adjusting rings and covers, refer to Section 33 42 41.31 - Frames, Grates, Rings, and Covers.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine existing structure, valve box, frame and cover or inlet box, frame and cover or inlet, and piping and connections for damage or defects that would affect adjustment to grade. Report such damage or defects to the Engineer.

3.2 ESTABLISHING GRADE

- A. Coordinate grade related items with existing grade and finished grade or paving and relate to established benchmark or reference line.

3.3 ADJUSTING MANHOLES AND INLETS

- A. Elevation of manhole or inlet can be raised using plastic or precast concrete rings, metal adjusting rings. The use of brick for adjustment of sanitary sewer manhole to grade is prohibited. Elevation of manhole or inlet can be lowered by removing masonry, adjusting rings or the top section of the barrel below the new elevation and then rebuilding or raising the elevation to the proper height.
- B. Salvage and reuse cast-iron frame and cover or grate at the direction of the Owner.
- C. Protect or block off manhole or inlet bottom using wood forms shaped to fit so that no debris or soil falls to the bottom during adjustment.
- D. Install a cast-in-place slab at the top of the manhole barrel to receive the cast-iron frame and cover. Form concrete slabs to the thickness specified in the design plans but no less than 6 inches.
- E. Set the cast-iron frame for the manhole cover or grate in a full mortar bed and adjust to the established elevation. In streets, adjust covers to be flush with pavement.
- F. Verify that manholes and inlets are free of visible leaks as a result of reconstruction. Repair leaks in a manner subject to Owner's approval.

3.4 ADJUSTING VALVE BOXES

- A. Salvage and reuse valve box at the direction of the Owner.
- B. Remove and replace 6-inch ductile iron riser pipe with suitable length for depth of cover required to establish the adjusted elevation to accommodate actual finish grade.
- C. Reinstall valve box and riser piping plumbed in vertical position. Provide minimum 6 inches telescoping freeboard space between riser pipe top butt end and interior contact flange of valve box for vertical movement damping.
- D. After valve box has been set, aligned, and adjusted so that top lid is level with final grade, pour concrete pad around valve box as shown in the design plans. Center valve box horizontally within concrete slab.

3.5 BACKFILL AND GRADING

- A. Backfill the area of excavation surrounding each adjusted manhole, inlet, and valve box and compact according to requirements of Section 31 06 20.13 - Excavation and Backfill for Utilities.
- B. Grade the ground surface to drain away from each manhole and valve box. Place earth fill around manholes to the level of the upper rim of the manhole frame. Place earth fill around the valve box concrete slab.
- C. In unpaved areas, grade surface at a uniform slope of 1 to 5 from the manhole frame to natural grade. Provide a minimum of 4 inches of topsoil.

END OF SECTION

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Section 33 05 16 - CONCRETE FOR UTILITY CONSTRUCTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cast-in-place concrete work for utility construction or rehabilitation, such as slabs on grade, small vaults, site-cast bases for precast units, and in-place liners for manhole rehabilitation.

1.2 UNIT PRICES

- A. Unit Prices.
 - 1. No payment will be made for concrete for utility construction under this Section. Include cost in applicable utility structures and fittings.

1.3 REFERENCES

- A. ACI 117 - Standard Tolerances for Concrete Construction and Materials.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
- C. ACI 302.1R - Guide for Concrete Floor and Slab Construction.
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- E. ACI 308 - Standard Practice for Curing Concrete.
- F. ACI 309R - Guide for Consolidation of Concrete.
- G. ACI 311 - Batch Plant Inspection and Field Testing of Ready Mixed Concrete.
- H. ACI 315 - Manual of Standard Practice for Detailing Reinforced Concrete Structures.
- I. ACI 318 - Building Code Requirements for Reinforced Concrete.
- J. ACI 544 - Guide for Specifying, Mixing, Placing, and Finishing Steel Fiber Reinforced Concrete.
- K. ASTM A 82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
- L. ASTM A 185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
- M. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- N. ASTM A 767 - Standard Specifications for Zinc-coated (Galvanized) Bars for Concrete Reinforcement.
- O. ASTM A 775 - Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
- P. ASTM A 820 - Steel Fibers for Fiber Reinforced Concrete.
- Q. ASTM A 884 - Specification for Epoxy-coated Steel Wire and Welded Wire Fabric for Reinforcement.
- R. ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
- S. ASTM C 33 - Standard Specification for Concrete Aggregates.

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- T. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - U. ASTM C 42 - Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - V. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.
 - W. ASTM C 138 - Standard Test Method for Unit Weight Yield and Air Content (Gravimetric) of Concrete.
 - X. ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
 - Y. ASTM C 150 - Standard Specification for Portland Cement.
 - Z. ASTM C 172 - Standard Practice for Sampling Freshly Mixed Concrete.
 - AA. ASTM C 173 - Standard Test Method for Air Content of Freshly Mixed Concrete by Volumetric Method.
 - BB. ASTM C 231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - CC. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - DD. ASTM C 309 - Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete.
 - EE. ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.
 - FF. ASTM C 595 - Standard Specification for Blended Hydraulic Cements.
 - GG. ASTM C 685 - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
 - HH. ASTM C 1017 - Chemical Admixtures for Use in Producing Flowing Concrete.
 - II. ASTM C 1064 - Standard Test Method for Temperature of Freshly Mixed Portland Cement Concrete.
 - JJ. ASTM C 1077 - Standard Practice for Laboratory Testing of Concrete and Concrete Aggregate for Use in Construction and Criteria for Laboratory Evaluation.
 - KK. ASTM D 638 - Test Method for Tensile Properties of Plastics.
 - LL. ASTM D 746 - Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
 - MM. ASTM D 747 - Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam.
 - NN. CRSI MSP-1 - Manual of Standard Practice.
 - OO. CRSI - Placing Reinforcing Bars.
 - PP. Federal Specification SS-S-210A - Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints
 - QQ. NRMCA - Concrete Plant Standards.

1.4 SUBMITTALS

- A. Conform to Section 01 33 00 - Submittal Procedures.
- B. Submit proposed mix design and test data for each type and strength of concrete in the Work.
- C. Submit laboratory reports prepared by an independent testing laboratory stating that materials used comply with requirements of this Section.

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- D. Submit manufacturer's mill certificates for reinforcing steel. Provide specimens for testing when required by the Engineer.
 - E. Submit certification from concrete supplier that materials and equipment used to produce and deliver concrete comply with this Specification.
 - F. When required on Drawings, submit shop drawings showing reinforcement type, quantity, size, length, location, spacing, bending, splicing, support, fabrication details, and other pertinent information.
 - G. For waterstops, submit product information sufficient to indicate compliance with this Section, including manufacturer's descriptive literature and specifications.

1.5 HANDLING AND STORAGE

- A. Cement: Store cement off the ground in a well-ventilated, weatherproof building.
- B. Aggregate: Prevent mixture of foreign materials with aggregate and preserve gradation of aggregate.
- C. Reinforcing Steel: Store reinforcing steel to protect it from mechanical injury and formation of rust. Protect epoxy-coated steel from damage to the coating.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cementitious Material:
 - 1. Portland Cement: ASTM C 150, Type II, unless the use of Type III is authorized by the Engineer; or ASTM C 595, Type IP. For concrete in contact with sewage use Type II cement.
 - 2. When aggregates are potentially reactive with alkalis in cement, use cement not exceeding 0.6 percent alkali content in the form of $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$.
- B. Water: Clean, free from harmful amounts of oils, acids, alkalis, or other deleterious substances, and meeting requirements of ASTM C 94.
- C. Aggregate:
 - 1. Coarse Aggregate: ASTM C 33. Unless otherwise indicated, use the following ASTM standard sizes: No. 357 or No. 467; No. 57 or No. 67, No. 7. Maximum size: Not larger than 1/5 of the narrowest dimension between sides of forms, nor larger than 3/4 of minimum clear spacing between reinforcing bars.

2. Fine Aggregate: ASTM C 33.
 3. Determine the potential reactivity of fine and coarse aggregate in accordance with the Appendix to ASTM C 33.
- D. Air Entraining Admixtures: ASTM C 260.
- E. Chemical Admixtures:
1. Water Reducers: ASTM C 494, Type A.
 2. Water Reducing Retarders: ASTM 494, Type D.
 3. High Range Water Reducers (Superplasticizers): ASTM C 494, Types F and G.
- F. Prohibited Admixtures: Admixtures containing calcium chloride, thiocyanate, or materials that contribute free chloride ions in excess of 0.1 percent by weight of cement.
- G. Reinforcing Steel:
1. Use new billet steel bars conforming to ASTM A 615, ASTM A 767, or ASTM A 775, grade 40 or grade 60, as shown on Drawings. Use deformed bars except where smooth bars are specified. When placed in work, keep steel free of dirt, scale, loose or flaky rust, paint, oil or other harmful materials.
 2. Where shown, use welded wire fabric with wire conforming to ASTM A 185 or ASTM A 884. Supply the gauge and spacing shown, with longitudinal and transverse wires electrically welded together at points of intersection with welds strong enough not to be broken during handling or placing.
 3. Wire: ASTM A 82. Use 16-1/2 gauge minimum for tie wire, unless otherwise indicated.
- H. Fiber:
1. Fibrillated Polypropylene Fiber:
 - a. Addition Rate: 1.5 pounds of fiber per cubic yard of concrete.
 - b. Physical Properties:
 - (1) Material: Polypropylene.
 - (2) Length: 1/2 inch or graded
 - (3) Specific Gravity: 0.91.
 - c. Acceptable Manufacturer: W. R. Grace Company, Fibermesh, or approved equal.

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2. Steel Fiber: Comply with applicable provisions of ACI 544 and ASTM A 820.
 - a. Ratio: 50 to 200 pounds of fiber per cubic yard of concrete.
 - b. Physical Properties
 - (1) Material: Steel.
 - (2) Aspect Ratio (for fiber lengths of 0.5 to 2.5-inch, length divided by diameter or equivalent diameter): 30:1 to 100:1.
 - (3) Specific Gravity: 7.8.
 - (4) Tensile Strength: 40-400 ksi.
 - (5) Young's Modulus: 29,000 ksi.
 - (6) Minimum Average Tensile Strength: 50,000 psi.
 - (7) Bending Requirements: Withstand bending around 0.125-inch diameter mandrel to an angle of 90 degrees, at temperatures not less than 60 degrees F, without breaking.
 - I. Curing Compounds: Type 2 white-pigmented liquid membrane-forming compounds conforming to ASTM C 309.

2.2 FORMWORK MATERIALS

- A. Lumber and Plywood: Seasoned and of good quality, free from loose or unsound knots, knot holes, twists, shakes, decay and other imperfections which would affect strength or impair the finished surface of concrete. Use S4S lumber for facing or sheathing. Forms for bottoms of caps: At least 2-inch (nominal) lumber, or 3/4-inch form plywood backed adequately to prevent misalignment. For general use, provide lumber of 1-inch nominal thickness or form plywood of approved thickness.
- B. Formwork for Exposed Concrete Indicated to Receive Rubbed Finish: Form or form-lining surfaces free of irregularities; plywood of 1/4-inch minimum thickness, preferably oiled at the mill.
- C. Chamfer Strips and Similar Moldings: Redwood, cypress, or pine that will not split when nailed and which can be maintained to true line. Use mill-cut molding dressed on all faces.
- D. Form Ties: Metal or fiberglass of approved type with tie holes not larger than 7/8 inch in diameter. Do not use wire ties or snap ties.
- E. Metal Forms: Clean and in good condition, free from dents and rust, grease, or other foreign materials that tend to disfigure or discolor concrete in a gauge and condition capable of supporting concrete and construction loads without significant distortion. Countersink bolt and rivet heads on facing sides. Use only metal forms which present a smooth surface, and which line up properly.

2.3 PRODUCTION METHODS

- A. Use either ready-mixed concrete conforming to requirements of ASTM C 94, or concrete produced by volumetric batching and continuous mixing in accordance with ASTM C 685.

2.4 MEASUREMENT OF MATERIALS

- A. Measure dry materials by weight, except volumetric proportioning may be used when concrete is batched and mixed in accordance with ASTM C 685.
- B. Measure water and liquid admixtures by volume.

2.5 DESIGN MIX

- A. Use design mixes prepared by a certified testing laboratory in accordance with ASTM C 1077 and conforming to requirements of this section.
- B. Proportion concrete materials based on ACI 211.1 to comply with durability and strength requirements of ACI 318, Chapters 4 and 5, and this specification. Prepare mix design of Class A concrete so minimum cementitious content is 564 pounds per cubic yard. Submit concrete mix designs to the Engineer for review.
- C. Proportioning on the basis of field experience or trial mixtures in accordance with requirements at Section 5.3 of ACI 318 may be used, if approved by the Engineer.
- D. Classification:

| Class | Type | Minimum Compressive Strength (lbs/sq. in.) | | Maximum W/C Ratio | Air Content (Percent) | Consistency range in slump (inches) |
|-------|-------------------------------|--|--------|-------------------|-----------------------|-------------------------------------|
| | | 7-day | 28-day | | | |
| A | Structural | 3200 | 4000 | 0.45 | 4+ 1 | 2 to 4* |
| B | Pipe Block Fill, Thrust Block | ---- | 2500 | ---- | 4+ 1 | 5 to 7 |

*When ASTM C 494, Type F or Type G admixture is used to increase workability, this range may be 6 to 9.

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- E. Add steel or polypropylene fibers only when called for on the Drawings or in another section of these Specifications.
 - F. Determine air content in accordance with ASTM C 138, ASTM C 173 or ASTM C 231.
 - G. Use of Concrete Classes: Use classes of concrete as indicated on the Drawings and other Specifications. Use Class B for unreinforced concrete used for plugging pipes, seal slabs, thrust blocks, trench dams, and concrete fill unless indicated otherwise. Use Class A for all other applications.

2.6 PVC WATERSTOPS

- A. Extrude from virgin polyvinyl chloride elastomer. Use no reclaimed or scrap material. Submit waterstop manufacturer's current test reports and manufacturer's written certification that the material furnished meets or exceeds Corps of Engineers Specification CRD-C572 and other specified requirements.
- B. Flat Strip and Center-Bulb Waterstops:
 - 1. Thickness: not less than 3/8 inch
 - 2. Acceptable Manufacturers:
 - a. Kirhill Rubber Co., Brea, California
 - b. Water Seals, Inc., Chicago, Illinois
 - c. Progress Unlimited, Inc., New York, New York
 - d. Greenstreak Plastic Products Co., St. Louis, Missouri
 - e. Approved equal.

2.7 RESILIENT WATERSTOP

- A. Resilient Waterstop: Where shown on the Drawings; either a bentonite- or adhesive-type material.
- B. Bentonite Waterstop:
 - 1. Material: 75 percent bentonite, mixed with butyl rubber-hydrocarbon containing less than 1.0 percent volatile matter, and free of asbestos fibers or asphaltic.
 - 2. Manufacturer's rated temperature ranges: For application, 5 to 125 degrees F; in service, -40 to 212 degrees F.
 - 3. Cross-sectional dimensions, unexpanded waterstop: 1 inch by 3/4 inch.
 - 4. Provide with adhesive backing capable of producing excellent adhesion to concrete surfaces.

C. Adhesive Waterstop:

1. Preformed plastic adhesive waterstop at least 2 inches in diameter.
2. Meets or exceeds requirements of Federal Specification SS-S-210A.
3. Supplied wrapped completely by a 2-part protective paper.
4. Submit independent laboratory tests verifying that the material seals joints in concrete against leakage when subjected to a minimum of 30 psi water pressure for at least 72 hours.
5. Provide primer, to be used on hardened concrete surfaces, from the same manufacturer who supplies the waterstop material.
6. Acceptable Manufacturer: Synko-Flex Preformed Plastic Adhesive Waterstop, Synko-Flex Products, Inc.; or approved equal.

PART 3 - EXECUTION

3.1 FORMS AND SHORING

- A. Provide mortar-tight forms sufficient in strength to prevent bulging between supports. Set and maintain forms to lines designated such that finished dimensions of structures are within the tolerances specified in ACI 117. Construct forms to permit removal without damage to concrete. Forms may be given slight draft to permit ease of removal. Provide adequate cleanout openings. Before placing concrete, remove extraneous matter from within forms.
- B. Install rigid shoring having no excessive settlement or deformation. Use sound timber in shoring centering. Shim to adjust and tighten shoring with hardwood timber wedges.
- C. Design Loads for Horizontal Surfaces of Forms and Shoring: Minimum fluid pressure, 175 pounds per cubic foot; live load, 50 pounds per square foot. Maximum unit stresses: 125 percent of allowable stresses used for form materials and for design of support structures.
- D. Back formwork with a sufficient number of studs and wales to prevent deflection.
- E. Re-oil or lacquer the liner on the job before using. Facing may be constructed of 3/4-inch plywood made with waterproof adhesive backed by adequate studs and wales. In such cases, form lining will not be required.
- F. Unless otherwise indicated, form outside corners and edges with triangular 3/4-inch chamfer strips (measured on sides).

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- G. Remove metal form ties to depth of at least 3/4 inch from surface of concrete. Do not burn off ties. Do not use pipe spreaders. Remove spreaders which are separate from forms as concrete is being placed.
 - H. Treat facing of forms with approved form coating before concrete is placed. When directed by Engineer, treat both sides of face forms with coating. Apply coating before reinforcement is placed. Immediately before the concrete is placed, wet surface of forms which will come in contact with concrete.

3.2 PLACING REINFORCEMENT

- A. Place reinforcing steel accurately in accordance with approved Drawings. Secure steel adequately in position in forms to prevent misalignment. Maintain reinforcing steel in place using approved concrete and hot-dip galvanized metal chairs and spacers. Place reinforcing steel in accordance with CRSI Publication "Placing Reinforcing Bars." Request inspection of reinforcing steel by the Engineer and obtain acceptance before concrete is placed.
- B. Minimum spacing center-to-center of parallel bars: 2-1/2 times nominal bar diameter. Minimum cover measured from surface of concrete to face of reinforcing bar unless shown otherwise on the Drawings: 3 inches for surfaces cast against soil or subgrade, 2 inches for other surfaces.
- C. Detail bars in accordance with ACI 315. Fabricate reinforcing steel in accordance with CRSI Publication MSP-1, "Manual of Standard Practice." Bend reinforcing steel to required shape while steel is cold. Excessive irregularities in bending will be cause for rejection.
- D. Do not splice bars without written approval of the Engineer. Approved bar bending schedules or placing drawings constitute written approval. Splice and development length of bars shall conform to ACI 318, Chapters 7 and 12, and as shown on Drawings. Stagger splices or locate at points of low tensile stress.

3.3 EMBEDDED ITEMS

- A. Install conduit and piping as shown on Drawings. Accurately locate and securely fasten conduit, piping, and other embedded items in forms.
- B. Install waterstops as specified in other sections and according to manufacturer's instructions. Securely position waterstops at joints as indicated on Drawings. Protect waterstops from damage or displacement during concrete placing operations.

3.4 BATCHING, MIXING AND DELIVERY OF CONCRETE

- A. Measure, batch, mix, and deliver ready-mixed concrete in accordance with ASTM C 94, Sections 8 through 11. Produce ready-mixed concrete using an automatic batching system as described in NRMCA Concrete Plant Standards, Part 2 - Plant Control Systems.

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- B. Measure, mix and deliver concrete produced by volumetric batching and continuous mixing in accordance with ASTM C 685, Sections 6 through 8.
 - C. Maintain concrete workability without segregation of material and excessive bleeding. Obtain approval of the Engineer before adjustment and change of mix proportions.
 - D. Ready-mixed concrete delivered to the site shall be accompanied by batch tickets providing the information required by ASTM C 94, Section 16. Concrete produced by continuous mixing shall be accompanied by batch tickets providing the information required by ASTM C 685, Section 14.
 - E. When high temperatures are expected, prepare ingredients, place, cure and protect in accordance with ACI 301, ACI 305.1, and as follows:
 - 1. When high air temperatures are expected that would affect quality of concrete, postpone concrete placement. Do not mix concrete when air temperature is at or above 95 degrees F and rising.
 - 2. Maintain concrete temperature below 90 degrees F at the time of placement, furnish test data or other proof that admixtures and mix ingredients for not produce flash set plastic shrinkage, or cracking as a result of heat of hydration and the ambient air temperatures. Cool ingredients before mixing to maintain fresh concrete temperatures as specified or less.
 - 3. Provide windbreaks, shading, fog spraying, sprinkling, wet cover or other means as necessary to maintain at or below specified temperature.
 - F. When adverse weather conditions affect quality of concrete, postpone concrete placement. Do not mix concrete when air temperature is at or below 40 degrees F and falling. Concrete may be mixed when temperature is 35 degrees F and rising. Take temperature readings in the shade, away from artificial heat. Protect concrete from temperatures below 32 degrees F until the concrete has cured for a minimum of 3 days at 70 degrees F or 5 days at 50 degrees F.
 - G. Clean, maintain and operate equipment so that it thoroughly mixes material as required.
 - H. Hand-mix only when approved by the Engineer.

3.5 PLACING CONCRETE

- A. Give sufficient advance notice to the Engineer (at least 24 hours prior to commencement of operations) to permit inspection of forms, reinforcing steel, embedded items and other preparations for placing concrete. Place no concrete prior to the Engineer's approval.
- B. Schedule concrete placing to permit completion of finishing operations in daylight hours. However, if necessary, to continue after daylight hours, light the site as required. If rainfall occurs after placing operations are started, provide covering to protect the work.

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- C. Use troughs, pipes and chutes lined with approved metal or synthetic material in placing concrete so that concrete ingredients are not separated. Keep chutes, troughs and pipes clean and free from coatings of hardened concrete. Allow no aluminum material to be in contact with concrete.
 - D. Limit free fall of concrete to 4 feet. Do not deposit large quantities of concrete at one location so that running or working concrete along forms is required. Do not jar forms after concrete has taken an initial set; do not place any strain on projecting reinforcement or anchor bolts.
 - E. Use tremies for placing concrete in walls and similar narrow or restricted locations. Use tremies made in sections, or provide in several lengths, so that outlet may be adjusted to proper height during placing operations.
 - F. Compact each layer of concrete with concrete spading implements and mechanical vibrators of approved type and adequate number for the size of placement. When immersion vibrators cannot be used, use form vibrators. Apply vibrators to concrete immediately after depositing. Move the vibrator vertically through the layer of concrete just placed and several inches into plastic layer below. Do not penetrate or disturb layers previously placed which have partially set. Do not use vibrators to aid lateral flow concrete. Closely supervise consolidation to ensure uniform insertion and duration of immersion.
 - G. Handling and Placing Concrete: Conform to ACI 302.1R, ACI 304R and ACI 309R.

3.6 WATERSTOPS

- A. Embed waterstops in concrete across joints as shown. Waterstops shall be continuous for the extent of the joint; make splices necessary to provide such continuity in accordance with manufacturer's instructions. Support and protect waterstops during construction operations; repair or replace waterstops damaged during construction.
- B. Install waterstops in concrete on one side of joints, leaving other side exposed until the next pour. When a waterstop will remain exposed for 2 days or more, shade and protect the exposed waterstop from direct rays of the sun during the entire exposure and until the exposed portion of the waterstop is embedded in concrete.
- C. Splicing PVC Waterstops:
 - 1. Splice waterstops by heat-sealing adjacent waterstop sections in accordance with the manufacturer's printed instructions.
 - 2. Butt end-to-end joints of two identical waterstop sections may be made in the forms during placement of waterstop material.

3. Prior to placement in formwork, prefabricate waterstop joints involving more than two ends to be joined together, an angle cut, an alignment change, or the joining of two dissimilar waterstop sections, allowing not less than 24-inch long strips of waterstop material beyond the joint. Upon inspection and approval by the Engineer, install prefabricated waterstop joint assemblies in formwork, and butt-weld ends of the 24-inch strips to the straight-run portions of waterstop in the forms.

D. Setting PVC Waterstops:

1. Correctly position waterstops during installation. Support and anchor waterstops during progress of the work to ensure proper embedment in concrete and to prevent folding over of the waterstop by concrete placement. Locate symmetrical halves of waterstops equally between concrete pours at joints, with center axis coincident with joint openings. Thoroughly work concrete in joint vicinity for maximum density and imperviousness.
2. Where a waterstop in a vertical wall joint does not connect with any other waterstop and is not intended to be connected to a waterstop in a future concrete placement, terminate the waterstop 6 inches below the top of the wall.

E. Replacement of Defective Field Joints: Replace waterstop field joints showing evidence of misalignment, offset, porosity, cracks, bubbles, inadequate bond or other defects with products and joints complying to the Specifications.

F. Resilient Waterstop:

1. Install resilient waterstop in accordance with manufacturer's instructions and recommendations.
2. When requested by the Engineer, provide technical assistance by manufacturer's representative in the field at no additional cost to the Owner.
3. Use resilient waterstop only where complete confinement by concrete is provided; do not use in expansion or contraction joints.
4. Where resilient waterstop is used in combination with PVC waterstop, lap resilient waterstop over PVC waterstop a minimum of 6 inches and place in contact with the PVC waterstop. Where crossing PVC at right angles, melt PVC ribs to form a smooth joining surface.
5. At the free top of walls without connecting slabs, stop the resilient waterstop and grooves (where used) 6 inches from the top in vertical wall joints.

6. Bentonite Waterstop:

- a. Locate bentonite waterstop as near as possible to the center of the joint and extend continuous around the entire joint. Minimum distance from edge of waterstop to face of member: 5 inches.
 - b. Where thickness of concrete member to be placed on bentonite waterstop is less than 12 inches, place waterstop in grooves at least 3/4-inch-deep and 1-1/4 inches wide formed or ground into concrete. Minimum distance from edge of waterstop placed in groove to face of member: 2.5 inches.
 - c. Do not place bentonite waterstop when waterstop material temperature is below 40 degrees F. Waterstop material may be warmed so that it remains above 40 degrees F during placement but means used to warm it shall in no way harm the material or its properties. Do not install waterstop where air temperature falls outside manufacturer's recommended range.
 - d. Place bentonite waterstop only on smooth and uniform surfaces; grind concrete smooth if necessary, to produce satisfactory substrate, or bond waterstop to irregular surfaces using an epoxy grout which completely fills voids and irregularities beneath the waterstop material. Prior to installation, wire brush the concrete surface to remove laitance and other substances that may interfere with bonding of epoxy.
 - e. In addition to the adhesive backing provided with the waterstop, secure bentonite waterstop in place with concrete nails and washers at 12-inch maximum spacing.
7. Adhesive Waterstop:
- a. With a wire brush thoroughly clean the concrete surface on which the waterstop is to be placed and then coat with primer.
 - b. If the surface is too rough to allow the waterstop to form a complete contact, grind to form an adequately smooth surface.
 - c. Install the waterstop with the top protective paper left in place. Overlap joints between strips a minimum of 1 inch and cover back over with protective paper.
 - d. Do not remove protective paper until just before final formwork completion. Concrete shall be placed immediately. The time that the waterstop material is uncovered prior to concrete placement shall be minimized and shall not exceed 24 hours.

3.7 CONSTRUCTION JOINTS

A. Definitions:

1. Construction joint: Contact surface between plastic (fresh) concrete and concrete that has attained initial set.
2. Monolithic: Manner of concrete placement to reduce or eliminate construction joints; joints other than those indicated on Drawings will not be permitted without written approval of Engineer. Where so approved, make additional construction joints with details equivalent to those indicated for joints in similar locations.
3. Preparation for Construction Joints: Roughen surface of concrete previously placed, leaving some aggregate particles exposed. Remove laitance and loose materials by sandblasting or high-pressure water blasting. Keep surface wet for several hours prior to placing of plastic concrete.

3.8 CURING

- A. Comply with ACI 308. Cure by preventing loss of moisture, rapid temperature change and mechanical injury for a period of 7 curing days when Type II or IP cement has been used and for 3 curing days when Type III cement has been used. Start curing as soon as free water has disappeared from the concrete surface after placing and finishing. A curing day is any calendar day in which the temperature is above 50 degrees F for at least 19 hours. Colder days may be counted if air temperature adjacent to concrete is maintained above 50 degrees F. In continued cold weather, when artificial heat is not provided, removal of forms and shoring may be permitted at the end of calendar days equal to twice the required number of curing days. However, leave soffit forms and shores in place until concrete has reached the specified 28-day strength, unless directed otherwise by the Engineer.
- B. Cure formed surfaces not requiring rubbed-finished surface by leaving forms in place for the full curing period. Keep wood forms wet during the curing period. Add water as needed for other types of forms. Or, at Contractor's option, forms may be removed after 2 days and curing compound applied.
- C. Finishes:
 1. Broom Finish:
 - a. After completion of straightedge operation, make first pass of traverse broom as soon as construction operations permit and before water sheen has disappeared from surface. Follow with as many passes as required to produce desired textured depth. Permit no unnecessary delays between passes. Keep drag wet, clean and free from encrusted mortar during use.

2. Rubbed Finish:

- a. At formed surfaces requiring rubbed finish, remove forms as soon as practicable without damaging the surface and immediately apply rub completely within 4 hours.
- b. After rubbed-finish operations are complete, continue curing formed surfaces by using either approved curing/sealing compounds or moist cotton mats until normal curing period is complete.

D. Unformed Surfaces: Cure by membrane curing compound method.

1. After concrete has received a final finish and surplus water sheen has disappeared, immediately seal surface with a uniform coating of approved curing compound, applied at the rate of coverage recommended by manufacturer or as directed by the Engineer. Do not apply less than 1 gallon per 180 square feet of area. Provide satisfactory means to properly control and check rate of application of the compound.
2. Thoroughly agitate the compound during use and apply by means of approved mechanical power pressure sprayers equipped with atomizing nozzles. For application on small miscellaneous items, hand-powered spray equipment may be used. Prevent loss of compound between nozzle and concrete surface during spraying operations.
3. Do not apply compound to a dry surface. If concrete surface has become dry, thoroughly moisten surface immediately prior to application. At locations where coating shows discontinuities, pinholes or other defects, or if rain falls on a newly coated surface before film has dried sufficiently to resist damage, apply an additional coat of compound at the specified rate of coverage.

3.9 REMOVAL OF FORMS AND SHORING

- A. Remove forms from surfaces requiring rubbing only as rapidly as rubbing operation progresses. Remove forms from vertical surfaces not requiring rubbed-finish when concrete has aged for the required number of curing days. When curing compound is used, do not remove forms before 2 days after concrete placement.
- B. Leave soffit forms and shores in place until concrete has reached the specified 28-day strength, unless directed otherwise by the Engineer.

3.10 DEFECTIVE WORK

- A. Immediately repair any defective work discovered after forms have been removed. If concrete surface is bulged, uneven, or shows excess honeycombing or form marks which cannot be repaired satisfactorily through patching, remove and replace the entire section.

3.11 FINISHING

- A. Patch honeycomb, minor defects and form tie holes in concrete surfaces with carr-bond and verticoat or approved equal. Repair defects by cutting out unsatisfactory material and replacing with new concrete, securely keyed and bonded to existing concrete. Finish to make junctures between patches and existing concrete as inconspicuous as possible. Use a stiff mixture and thoroughly tamp into place. After each patch has stiffened sufficiently to allow for greatest portion of shrinkage, strike off mortar flush with the surface.
- B. Apply a rubbed finish to exposed surfaces of formed concrete structures as noted on Drawings. After pointing has set sufficiently, wet the surface with a brush and perform first surface rubbing with No. 16 carborundum stone, or approved equal. Rub sufficiently to bring surface to paste, to remove form marks and projections, and to produce a smooth, dense surface. Add cement to form surface paste as necessary. Spread or brush material, which has been ground to paste, uniformly over surface and allow to reset. In preparation for final acceptance, clean surfaces and perform final finish rubbing with No. 30 carborundum stone or approved equal. After rubbing, allow paste on the surface to reset; then wash surface with clean water. Leave structure with a clean, neat and uniform-appearing finish.
- C. Apply a wood float finish to concrete slabs.

3.12 FIELD QUALITY CONTROL

- A. Testing shall be performed under provisions of Section 01 45 29 - Testing Laboratory Services.
- B. Unless otherwise directed by Engineer, the following minimum testing of concrete is required. Testing shall be performed by qualified individuals employed by an approved independent testing agency and conform to the requirements of ASTM C 1077.
 - 1. Take concrete samples in accordance with ASTM C 172.
 - 2. Make one set of four compression test specimens, or as directed by the Engineer, for each mix design at least once per day and for each 150 cubic yards or fraction thereof. Make, cure and test the specimens in accordance with ASTM C 31 and ASTM C 39.
 - 3. When taking compression test specimens, test each sample for slump according to ASTM C 143, for temperature according to ASTM C 1064, for air content according to ASTM C 231, and for unit weight according to ASTM C 138.
 - 4. Inspect, sample and test concrete in accordance with ASTM C 94, Section 13, 14, and 15, and ACI 311-5R.
- C. Test Cores: Conform to ASTM C 42.

- D. Testing High Early Strength Concrete: When Type III cement is used in concrete, the specified 7-day and 28-day compressive strengths shall be applicable at 3 and 7 days, respectively. For Early Strength Concrete, a set of 5 specimen cylinders shall be required.
- E. If 7-day or 3-day test strengths (as applicable for type of cement being used) fail to meet established strength requirements, extended curing or resumed curing on those portions of structure represented by test specimens may be required. If additional curing fails to produce the required strength, strengthening or replacement of portions of structure which fail to develop required strength may be required by the Engineer, at no additional cost to the Owner.

3.13 PROTECTION

- A. Protect concrete against damage until final acceptance by the Owner.
- B. Protect fresh concrete from damage due to rain, hail, sleet, or snow. Provide such protection while the concrete is still plastic, and whenever such precipitation is imminent or occurring.
- C. Do not backfill around concrete structures or subject them to design loadings until components of the structure needed to resist the loading are complete and have reached the specified 28-day compressive strength, except as authorized otherwise by the Engineer.

END OF SECTION

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Section 33 14 13 – WATERLINE PIPE WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section shall cover the furnishing, laying, jointing and testing of all water pipe, including water appurtenances, both in open cut and in tunnels, as shown on the drawings, or as directed by the Engineer.

1.2 UNIT PRICES

A. Unit Prices.

1. Payment for water mains installed by open-cut or augered, with or without casing, is on a linear foot basis for each size of pipe installed.
2. Payment for water services installed by open-cut or augered, with or without casing, is on a unit price basis for each ¾-inch single service, 1-inch double service, long and short services.
3. No separate payment will be made for water pipe branches associated with fire hydrant assemblies. Include cost of such pipework in Contract unit prices for items listed in bid form requiring fire hydrants.
4. No separate payment will be made for waterline fittings associated with pipe work, unless listed in the contract unit prices. Include cost of such items in the Contract unit prices for items listed in bid form requiring waterline pipework.
5. No separate payment will be made for thrust blocks and pipe restraints associated with pipe work. Include cost of such items in the Contract unit prices for items listed in bid form requiring waterline pipework.
6. Payment of valves will be on a unit price basis for each valve installed for each size and type of valve.
7. Payment of fire hydrants will be on a unit basis for each fire hydrant assembly installed. Fire hydrant assembly include connecting tee, water pipe branches (regardless of length), gate valve, fire hydrant and necessary restraints and thrust blocking.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. The material used in pipe work shall be furnished by the Contractor, as approved by the Owner, to meet the requirements of the Work of the Contractor as specified herein.
1. Water Pipe - Water pipe for main lines may be of any of the following classifications. Any pipe found defective, not meeting the specifications, or improperly installed, shall be rejected and so marked, and shall be replaced by pipe approved by the Owner at no additional cost to the Owner.
 - a. Polyvinyl chloride pipe for waterlines 14-inch diameter or greater shall conform to or exceed AWWA Standard "Polyvinyl Chloride (PVC) Pressure Pipe" C905, Class 165 DR-25, or Class 235 DR-18, latest revision. Gaskets shall meet the requirements of ASTM F 477. Use elastomeric factory-installed gaskets to make joints flexible and watertight.
 - b. Polyvinyl chloride pipe for waterlines 4-inch to 12-inch shall conform to or exceed AWWA Standard "Polyvinyl Chloride (PVC) Pressure Pipe" C900, Class 165 DR-25, or Class 235 DR-18, latest revision. Gaskets shall meet the requirements of ASTM F 477. Use elastomeric factory-installed gaskets to make joints flexible and watertight
 - c. Pipe 8 through 12-inch: Certain Teed Certalok Yelomine SDR21 Class 200 (ASTM D2241) RJ Restrained Joint PVC Pipe; nominal 20-foot lengths; steel pipe equivalent outside diameters.
 - d. Pipe 16-inch: Certain Teed Certalok DR25 C905 RJ Restrained Joint PVC Pipe; nominal 20-foot lengths; steel pipe equivalent outside diameters.
 - e. Pipe 6-inch through 12-inch: Fusible AWWA C-900 DR-25 PVC; nominal 20, 30, or 40-foot lengths; steel pipe equivalent outside diameters.
 2. Waterline Fittings - Fittings for water lines may be of any of the following classifications.
 - a. Fittings for polyvinyl chloride (PVC) pipe 4-inch through 12-inch shall meet AWWA Standard C-100 or C153 "Ductile-Iron Compact Fittings, 3 inch through 12 inch for Water and Other Liquids," and C104, latest revision, and shall be sized to fit PVC water pipe. No adapters for fittings with outside diameters different from PVC pipe shall be used. Where restrained joints are shown in the design plans. Provide mechanical joint restraint meeting ASTM F 1674-96.

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- (1) Flanged Fittings: ANSI A 21.10; ANSI B 16.1 cast or ductile iron. Flanges: ANSI B 16.1, Class 125; pressure rated at 250 psig. Bolts shall be corten or carbon steel with greased ends.
 - (2) Mechanical Joint Fittings: ANSI A 21.11 (AWWA C 110); pressure rated at 250 psi. Bolts shall be corten or carbon steel with greased ends.
- b. Fittings for polyvinyl chloride (PVC) Schedule 40 pipe less than 4 inch shall conform to ASTM Standard D2466, latest revision.
 - c. Mechanical Joint Tapping Sleeve Fittings for 6-inch through 12-inch PVC applications, shall comply with applicable requirements of ANSI/AWWA C153/21/53 and ASME/ANSI B16.1 or as approved by the Engineer.

All fittings shall be wrapped in a plastic protector in conformance with AWWA Standard C-105 and ANSI A21.5 (2.5 to 3 percent carbon black content, low or high density) "Polyethylene Encasement for Gray and Ductile Cast-Iron piping for Water and Other Liquids" and conforming to ASTM D 1248. Fitting wrapping shall be installed in such a manner as to curtail or prevent corrosion of the metallic fittings. Any fittings found defective, not meeting the specifications, or improperly installed, shall be rejected and so marked, and shall be replaced by fittings approved by the Owner, at no additional cost to the Owner.

3. Service Connections - Water service connections shall be installed with rubber gasket double strap bronze saddles. "Modified" double strap saddles will not be acceptable substitutes. Ball corporation valve shall be installed at the service saddle and within the meter box, as per the design detail. The service lines and casings shall be of the following classifications.
 - a. Copper tubing for water service lines shall be type "K" and shall conform to ASTM Standard "Seamless Copper Water Tube" B-88, latest revisions.
 - b. Cross-linked polyethylene (PEX) water service line shall conform to AWWA C904.
 - c. Polyvinyl chloride casing for water service lines shall be Schedule 40 PVC and shall conform to ASTM Standard "Polyvinyl Chloride (PVC) Plastic Pipe" D-1785, latest revision.

Any material found defective, not meeting the specifications, or improperly installed, shall be rejected and so marked and shall be replaced with material approved by the Owner's Engineer at no additional cost to the Owner. Service line tubing crossings under traveled roadways shall be installed as specified on the plans with a minimum cover of 30" below roadway surface.

4. Valves
 - a. Gate valves shall conform to AWWA Standard "Resilient Seated Gate Valves, 3 inch through 12 inch" C509, latest revision, and shall be utilized for lines 12 inch and smaller, unless otherwise specified in the construction drawings. All gate valves shall be iron body, bronze mounted, double disc parallel seats, non-rising stem, and internal wedging type. Valves must embody the best workmanship and finish, and open and close freely and easily. In closing, the gates must move without friction to their position opposite their ports, both discs being then closed squarely against the seat rings. When valves are in full open position, the disc shall be raised to clear the waterway and provide an opening equal to the full nominal diameter of the valves. All gate valves shall open by turning hand wheel or square nut operator counterclockwise. Hydrostatic and leakage tests shall conform to AWWA Standard "Resilient Seated Gate Valves, 3 inch through 12-inch" C509-80, latest revision.
 - b. Butterfly valves shall conform to AWWA Standard "Rubber Seated Butterfly Valves" C504, latest revision; and shall be Class 150B, long body flanged, and shall be utilized for lines 16 inch and larger, unless otherwise specified in the construction drawings. Valves shall be provided with manual operators with enclosed gear grease housing and hand wheels. Manual operators shall be composed of work gearing, totally enclosed in a grease-packed gear case. Work gears shall be bronze and worm gears shall be hardened steel. Manual operators shall be furnished with devices (externally mounted) to hold the valve in a fixed position for an extended period of time and to indicate valve position. All butterfly valves shall open by turning hand wheel or square nut operator counterclockwise. Hydrostatic and leakage tests shall conform to AWWA Standard "Rubber-Seated Butterfly Valves" C504, latest revision.
5. Fire Hydrants - Unless otherwise specified, fire hydrants shall conform to AWWA Standard "Dry-Barrel Fire Hydrants" C502, latest revision. Hydrants shall be cast iron, fully bronze mounted and have a working pressure of 150 psi. Fire hydrants shall have a minimum valve opening of 5-1/4 inch.

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

A. PIPE LAYING

1. All water mains shall be installed as specified in plans with a minimum cover of 48 inches from the top of pipe to an established grade. Where pipe is installed beneath State Highways, there shall be a minimum vertical distance of 4 feet from top of pipe to the lowest pavement elevation on the highway, or as per the Highway Department's permit requirements. In special locations, Highway Department may require additional cover. Construction clearance and other requirements to cross under State Highways shall be obtained by Owner. Where pipe is installed beneath drainage or irrigation ditches, there shall be a minimum vertical distance of 3 feet from top of pipe to the flowline of the ditch, or as shown in the design plans or by permit requirements. Where pipe is installed beneath railroad tracks, there shall be a minimum vertical distance of 4 feet-6 inches from the top of pipe casing to top of railroad ties, or as shown in the design plans or by permit requirements. Utility crossing permits to cross under railroad track will be obtained from Railroad Authority by Owner. Any expense associated with permit costs, insurance requirements, construction bracing or supports to tracks during excavation operation beneath trackage shall be considered the responsibility of the Contractor and part of the Contract.
2. For all pipe, the Contractor shall familiarize himself with the TCEQ Chapter 290 Separation Distance Requirements and verify that all proposed work conforms to these regulations. The Contractor shall immediately notify Utility Owner and the Engineer once the Contractor discovers that field conditions cannot meet the TCEQ Chapter 290 Separation Distance Requirements.

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3. Procedure - After the trench is excavated to grade as specified, it shall be backfilled in accordance with the details shown in the design plans. Bedding material shall provide a smooth and uniform pipe bed for the entire length of the water pipe barrel. Trenching and pipe laying shall be uniformly in a straight line and to uniform elevation unless otherwise specified on plans. Pipe, fittings and valves shall be carefully handled to avoid damage. Before placing pipe into the trench, the outside of the spigot and the inside of the bell shall be wiped clean and dry, free from oil and grease. Every precaution shall be taken to prevent foreign material from entering the pipe. During layout operation, no debris, tools, clothing or other material shall be placed into the pipe. After placing a length of pipe in the trench, the spigot end shall be centered in the bell; the pipe forced home, brought to the correct alignment and covered with an approved backfill material. Detectable warning metallic tape with "Waterline Below" shall be buried above pipe at a depth of 18 inches below finished grade for surface locating purposes. The minimum width of the metallic tape shall be 3-inches wide or as specified by the manufacturer. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other approved means. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.
- B. PIPE JOINTING - In laying the water pipe to line and grade, the pipe shall be jointed in accordance with one of the following approved jointing methods. Owner reserves the right, before construction, or while construction is in progress, to change the type of joints if Owner's Engineer so directs.
1. Asbestos Cement Pipe Jointing - The Contractor shall furnish and install asbestos cement pipe in accordance with AWWA Standard "Installation of Asbestos Cement Pressure Pipe" C603-78, latest revision. The machined ends of the pipe to be jointed, coupling grooves and rubber rings shall be cleaned immediately before assembly. Care should be taken not to roll, pinch or reverse the gasket when placed in the bell. Each pipe joint shall be sealed with a coupling consisting of an asbestos cement sleeve and two rubber rings or an equivalent coupling or joint of equivalent strength and performance, as determined by Engineer. The pipe joint shall not be deflected either vertically or horizontally beyond the limits recommended by the manufacturer.

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2. Polyvinyl Chloride (PVC) Pipe Jointing - The Contractor shall make certain before jointing polyvinyl chloride pipe that the ring groove in the bell of the pipe is clean, with no dirt or foreign material that could interfere with proper seating of the ring. Make sure pipe end is clean. Wipe with a clean dry cloth around the entire circumference from the end to one inch beyond the reference mark. Lubricate the spigot end of the pipe, using only the lubricant supplied by the manufacturer. Be sure the entire circumference is covered. The coating should be the equivalent of a brush coat of enamel paint. It can be applied by hand, cloth, pad, sponge or glove. Do not lubricate the ring groove in the bell to avoid lubrication causing ring displacement. The level end is then inserted into the bell so that it is in contact with the ring. Brace the bell, while the level end is pushed in under the ring, so that previously completed joints in the line will not be closed. The spigot end is pushed until the reference mark on the spigot end is flush with the end of the bell. If undue resistance to inserting of the level end is encountered or the reference mark does not reach the flush position, disassemble the joint and check the position of the ring. If it is twisted or pushed out of its seat, clean the ring, bell and level end and repeat the assembly steps.
- C. WET CONNECTIONS - Schedules of existing fittings and proposed new fittings needed to make wet connections to existing waterlines as shown on the plans are estimates only. It is to be recognized that after existing lines and fittings are uncovered, that some discrepancies may occur. Where discrepancies occur, the Contractor shall request a decision by the Owner as to how the connection in question shall be made. Additional fittings shall be included in the costs associated with applicable bid items. Contractor shall plan his work concerning wet connections in such a way that a minimum of inconvenience shall occur to existing water customers due to water service interruptions. Before water service interruptions are made to any customer, Contractor shall notify designated official and cooperate with operating personnel in every way to minimize service interruptions due to wet conditions. In certain locations, other utility lines or conduits will be obstructing the normal path of proposed waterlines. In such instances, gravity lines of all kinds hold priority as to grade over water pressure lines, gas lines, electric conduits, or other obstruction conduits or combinations of conduits, which may be encountered. Contractor shall analyze conditions carefully, while considering TCEQ Chapter 290 separation distance requirements, and then use best judgment in determining proper method of proceeding through obstructed area with waterline construction, and shall notify the Owner forty-eight (48) hours in advance of making such connection after obtaining approval from the Owner's Engineer.
- D. APPURTENANCES - Appurtenances to the waterline shall be provided and laid in accordance with the drawings and in the manner as specified herein.
1. Valves. Valves shall be installed at the locations indicated on, and with concrete thrust blocks as specified in the construction drawings. All valves shall be wrapped in a plastic protector in conformance with AWWA Standard C-105 and ANSI A21.5 "Polyethylene Encasement for Gray and Ductile Cast-Iron piping for Water and Other Liquids." Valve wrapping shall be installed in such a manner as to curtail or prevent corrosion of the metallic valves.

2. Fire Hydrants. All fire hydrants shall be located as shown in the plans, and in a manner to provide complete accessibility, and to minimize the possibility of damage from vehicles or injury to pedestrians. All hydrants shall stand plumb with the pumper nozzle facing the curb (or as shown in the design plans) and the bury line of the hydrant at the finished grade. The barrel of the fire hydrant shall be set so that no portion of the pumper nozzle or hose nozzle will be less than 12 inches from the curb, walkway, or bike path or more than 20 feet from the face of the curb. The preferred location for the fire hydrant shall be 2 feet clear of the right-of-way line. All fire hydrants shall be placed in accordance with any City or County ordinances. Fire hydrants installed near State Highways shall be in accordance with State Department of Highways and Public Transportation requirements. All fire hydrants shall be connected to the main in the manner shown in the design plans.

3.2 TESTING AND STERILIZATION

- A. TESTING. All newly laid sections of pipe shall be hydrostatically tested at a gauge pressure of 150 psi. Contractor has the option of running hydrostatic test before or after trench has been completely backfilled. Trenches must be at least partially backfilled before hydrostatic testing to prevent pipe shift. Hydrostatic tests shall be in accordance with AWWA Standard C600 Section 4 "Hydrostatic Testing" latest revision.
 1. Hydrostatic Test Procedure - The Contractor shall provide all necessary equipment and shall perform all Work required in connection with the tests. All pressure pipe, fittings and valves shall be subjected to a hydrostatic pressure of 150 psi. Air pressure testing will not be allowed. The line under test shall be slowly filled with water to the specified test pressure. The lowest elevation point of the section being tested shall be determined and any corrections necessary shall be corrected to the elevation of the test gauge by means of a hand pump, gasoline or electrically driven test pump connected to the pipe. A blow off or fire hydrant shall be installed at the end of the line under test. Before applying the specified test pressure, all air shall be expelled from the test section including service connections. If hydrants or blow offs are not available at high places, tap at points of highest elevation shall be made before the test is made and brass plugs inserted after the test has been completed. The required test pressure shall be applied for not less than two (2) hours and longer if ordered by the Owner. Leakage tests shall be conducted concurrently with pressure tests. Owner will inspect all pipe, fittings, valves and joints under tests. Any faults found to be due to improper workmanship shall be corrected by the Contractor at no expense to Owner.
- B. STERILIZATION. Pipeline construction shall be in accordance with Section 4 of AWWA Standard C601-01, latest revision. Upon or during completion of the hydrostatic test, the new section of pipe shall be sterilized in accordance with AWWA Standard "Disinfecting Water Mains" C601, latest revision; and the State of Texas Health Standards. Chlorine may be applied by the following methods: Continuous Feed Method and Chlorine Tablet Method. Contractor shall provide all equipment and chemicals necessary for sterilization.

1. Continuous Feed Method - This method is suitable for general application. Water from the existing distribution system or other approved sources of supply shall be made to flow at a constant, measured rate into the newly laid pipeline. The water shall receive a dose of chlorine, also fed at a constant, measured rate. The two rates shall be proportioned so that the chlorine concentration in the water in the pipe is maintained at a minimum of 50 mg/l available chlorine. During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the line supplying the water. Chlorine application shall not cease until the entire main to be tested is filled with the chlorine solution. The chlorine water shall be retained in the main for at least 24 hours during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. At the end of this 24-hour period, the treated water shall contain no less than 25 mg/l chlorine throughout the length of the main.
2. Chlorine Tablet Method - Tablet disinfection is best suited to short extensions (up to 2,500 feet) and smaller diameter mains (up to 12 inches). Because the preliminary flushing step must be eliminated, this method shall be used only when scrupulous cleanliness has been exercised. It shall not be used if trench water or foreign material has entered the main or if the water is below 5°C (41°F). Calcium hypochlorite tablets are placed in each section of pipe and in hydrants, hydrant branches and other appurtenances. They shall be attached by an adhesive, except for the tablets placed in hydrants and in the joints between the pipe sections. All the tablets within the main must be at the top of the main. If the tablets are fastened before the pipe section is placed in the trench, their position should be marked on the section to assure that there will be no rotation. In placing tablets in joints, either crushed or placed on the inside annular space or, if the type of assembly does not permit, they are rubbed like chalk on the butt ends of the sections to coat them with calcium hypochlorite. The adhesive may be Permatex No. 1 or any alternative approved by the Owner. There shall be no adhesive on the tablet except on the broad side next to the surface to which the tablet is attached. If desired, the calcium hypochlorite may be placed in the pipe in granular form at a rate of one (1) cup (4 fl. oz.) per each pipe. When installation has been completed, the main shall be filled with water at a velocity of less than 1-ft./sec. This water shall remain in the pipe for at least 24 hours. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water.
3. Final Flushing - After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than 1 mg/l. Chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipeline.

4. Bacteriologic Tests - After final flushing, and before the water main is placed in service, a sample or samples shall be collected from the end of the line and tested for bacteriologic quality and shall show the absence of coliform organisms. If the number and frequency or samples is not prescribed by the public health authority having jurisdiction, at least one sample shall be collected from chlorinated supplies when the chlorine residual is maintained throughout the new main. From unchlorinated supplies, at least two samples shall be collected at least 24 hours apart. In the case of extremely long mains, it is desirable that samples be collected the length of the line as well as at its end. Samples for bacteriologic analysis shall be collected in sterile bottles treated with sodium thiosulfate. No hose or fire hydrant shall be used in collection of samples. A suggested sampling tap consists of a standard corporation cock installed in the main with a copper tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

5. Repetition of Procedure. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. The tablet method cannot be used in these subsequent disinfections. When the samples are satisfactory, the main may be placed in service.

END OF SECTION

Section 33 31 11 – SANITARY SEWER PIPE WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Under this section is included the furnishing, laying, jointing and testing of all sewer pipe, including sewer pipe and sewer appurtenances, both in open cut and in tunnels, as shown on the drawings or as directed by the Engineer.

1.2 UNIT PRICES

A. Unit Prices.

1. Payment for normal depth sanitary sewer, up to 8 feet deep, by open-cut or augered with or without casing is on a linear foot basis for each size of pipe. Depth is measured from bottom of the pipe to the proposed natural ground. Separate pay items are used for open-cut and augered installation.
2. Payment for sanitary sewer, greater than 8-foot in depth, by open-cut or augered is on a linear foot basis for each 2-foot increment for depths greater than 8 feet. Depth is measured from bottom of the pipe to the proposed natural ground.
3. Payment for normal depth manholes, up to 8 feet deep, is on a unit price basis for each manhole installed. Depth is measured from proposed top of cover to sewer invert.
4. Payment for manholes, greater than 8-foot in depth, is on a unit price for each manhole installed for each 2-foot increment. Depth is measured from proposed top of cover to sewer invert.
5. Payment for sanitary service connections in on a unit price for each single, double, short and long service connection installed.
6. Payment for force mains installed by open-cut or augered with or without casing is on a linear foot basis for each size of pipe installed. Separate pay items are used for open-cut and augered installation.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Gravity Sewer Pipe

1. Gravity sewer pipe may be of any of the following classifications. Any pipe found defective, not meeting the specifications, or improperly installed shall be rejected and so marked and shall be replaced by pipe approved by the Engineer at no additional cost to Utility Owner.

- a. Pipe and fittings shall be manufactured in conformance with the materials and methods described in ASTM Specification D-3034. Joint seals shall be compression type rubber gaskets in compliance with the requirements of ASTM Specification D-1869.
- b. Pipe and fittings shall be manufactured in conformance with the materials and methods described in ASTM Specification F-789 and UNI-B-10. Gaskets shall comply with the requirements of ASTM Specification F-477.

2. Manholes

- a. Manholes shall be constructed of glass fiber-reinforced isophalic polyester resin containing chemically enhanced sand for use in sanitary sewer applications. They shall be a one-piece unit of one class, fabricated in a composite laminate. Walls shall be of uniform thickness and shall be free from thin spots and voids. Exterior surface shall be free of ridges and sharp protrusions and reinforcement. Interior surface shall also be smooth and free of ridges to allow for self-cleaning. The exterior surface shall be covered with graded sand to facilitate bonding to the concrete base pad, cement stabilized sand backfill and cement grout used to seal around all incoming lines. Manholes shall conform to the following design criteria:
 1. ASTM D-3753 "Standard Specification of Glass-Fiber reinforced Polyester Manholes."
 2. ASTM C-581 "Practice for determining chemical resistance of chemical thermosetting resins used in glass-fiber reinforced structures intended for liquid Service."
 3. ASTM D-2412 "Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading."
 4. ASTM D-695 "Test Methods for Compressive Properties of Rigid Plastics."
 5. ASTM D-2584 "Test Method for Ignition Loss of Cured Reinforced Resins."
 6. AASHO H-20 Axial Loading Nominal inside diameter of the manhole shall be 48".
Thickness of the manhole shall be 0.50" nominal. Height shall be selected in accordance with project plans.
- b. Dimensions: The manhole shall be a circular cylinder, reduced at the top to a circular manway not smaller than 30" inside diameter. Manholes shall be produced in half-foot increments in length +/- 2". Nominal inside diameters shall be 48", 60", and 72" as shown in the design details. Tolerance on the inside diameter shall be +/- 1%.
- c. Configuration: The manway reducing cone section shall be centered on the manhole barrel and must provide a bearing surface on which a standard ring and cover may be supported and adjusted to grade. The reducer shall be joined to the barrel section at the factory with resin and glass fiber reinforcement, thus providing required monolithic design to prevent infiltration and/or exfiltration through the manhole.
- d. Loading: The manhole shall be manufactured in one class of load rating. This class shall be H-20 wheel load (minimum 16,000 pounds dynamic wheel load).

- e. **Manufacturer and Certification:** The manholes shall be Containment Solutions, Inc. Flowtite Fiberglass Manholes or approved equal that conforms to ASTM D. 3753-81, Standard Specifications for Fiberglass Reinforced Polyester Manholes and all noted applicable documents. The manufacturer shall submit written certification that their product meets the requirements of ASTM D. 3753-81 with test results of specified manholes included.

B. Force Mains

1. Pressure sewer pipe will be the following classification. Any pipe found defective, not meeting the specifications, or improperly installed shall be rejected and so marked and shall be replaced by pipe approved by the Engineer at no additional cost to Utility Owner.
 - a. Polyvinyl chloride pipe for force mains shall conform to AWWA Standard "Polyvinyl Chloride (PVC) Pressure Pipe" C-900 - 750 Class 100 DR25 latest revision. Fittings for polyvinyl chloride (PVC) pipe shall be Ductile Iron Class 125 "Compact Fittings" short body, tar coated (not cement lined). Transition gaskets shall also be included, unless otherwise noted on the contract bid document or drawings.
 - b. Polyvinyl chloride pipe for directional bored force mains shall conform to Fusible AWWA C-900 DR-25 PVC.

C. Service Connections

1. Property service connections shall be installed using Polyvinyl Chloride Pipe (PVC). The pipe type shall be specified in the service line detail shown in the design plans.

D. Concrete Surface Coatings

1. All interior manhole concrete surfaces shall be coated with 8mils of Raven 155 epoxy primer and 125 mils of Raven 405 – 100% solids, solvent-free ultra-high build epoxy system manufactured by Raven Lining Systems, Broken Arrow, Oklahoma or Engineer approved equal.

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

- A. For all pipe, the Contractor shall familiarize himself with the TCEQ Chapter 217 Separation Distance Requirements and verify that all proposed work conforms to these regulations. The Contractor shall immediately notify Utility Owner and the Engineer once the Contractor discovers that field conditions cannot meet the TCEQ Chapter 217 Separation Distance Requirements.

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- B. After the trench is excavated to grade as specified, it shall be filled to grade with a minimum 6-inch bank run sand layer, in accordance with 31 06 20.16 - Utility Backfill Materials. This material shall be mechanically tamped to a density minimum of 90%. This material shall provide a smooth and uniform pipe bed for the entire length of the sewer pipe barrel. Trench foundation preparation may require dewatering, gravel bedding, or cement stabilized sand to create a stable foundation for pipe installation. Stable foundation conditions and trench improvements will be at the direction of the Utility Owner Inspector or the Engineer and at no additional costs to the Owner.
- C. Trenching and pipe laying shall be uniformly in a straight line and to uniform elevations unless otherwise specified on the plans. Pipe and fittings shall be carefully handled to avoid damage. Before placing pipe into the trench, the outside of the spigot and the inside of the bell shall be wiped clean and dry, free from oil and grease. Every precaution shall be taken to prevent foreign material from entering the pipe. During layout operation, no debris, tools, clothing or other material shall be placed into the pipe. After placing a length of pipe into the trench, the spigot end shall be centered in the bell, the pipe forced home, brought to the correct alignment and covered with an approved backfill material. Detectable warning metallic tape with "Sewer Line Below" shall be buried as directed by the Utility Owner inspector, but no greater than 4' below the finished grade. The width of the metallic tape shall be 6-inches wide or as specified by the manufacturer.
- D. Watertight Joint Materials: The contractor must exert every reasonable effort to secure a watertight joint and prevent infiltration of ground water into or exfiltration of sewage out of all pipe sewers and property service connections. Any joint materials found to be defective or not meeting the specifications shall be rejected and replaced by approved joint materials at no additional cost to Utility Owner.
- E. Polyvinyl Chloride Pipe (PVC) Jointing: The contractor shall make certain before jointing polyvinyl chloride pipe that the ring groove in the bell of the pipe is clean with no dirt or foreign material that could interfere with proper seating of the ring. Make sure pipe end is clean. Wipe with a clean dry cloth around the entire circumference from the end to one (1) inch beyond the reference mark. Lubricate the spigot end of the pipe, using only the lubricant supplied by the manufacturer. Be sure the entire circumference is covered. The coating shall be the equivalent of a brush coat of enamel paint. It can be applied by hand, cloth, pad, sponge, or glove. Do not lubricate the ring groove in the bell to avoid lubrication causing ring displacement. The level end is then inserted into the bell so that it is in contact with the ring. Brace the bell, while the level end is pushed in under the ring, so that previously completed joints in the line will not be close. The spigot end is pushed until the reference mark on the spigot end is flush with the end of the bell. If undue resistance to insertion of the level end is encountered or the reference mark does not reach the flush position, disassemble the joint and check the position of the ring. If it is twisted or pushed out of its seat, lean the ring, bell and level end and repeat the assembly steps.

Water stop joints shall be Polyvinyl Chloride (PVC) or other similar approved joint materials.

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- F. Sewer Appurtenances - Appurtenances to the sewer shall be provided and laid in accordance with the drawings and in the manner as specified herein. Appurtenances in addition to those required by the drawings or the proposal, as approved or directed by the Engineer, shall be paid for under the appropriate items of the proposal.
 - G. Service Branches and Fittings - Branches and fittings shall be provided and laid as and where directed. T-branches and Y-branches, placed in the sewer for property service connections, shall be located by the contractor, as directed by the Engineer, at such points in the sewer so as to result in the property service connection having the shortest length possible between the sewer and property line or easement line, unless otherwise indicated on the drawing or directed by the Engineer.

The Contractor shall install all service lines in accordance with TCEQ separation distance and Southern Building Code requirements. Contractor shall notify the Inspector or Engineer prior to the installation of any service that is in question in accordance to the TCEQ separation or Southern Building Code requirements. Where not approved street grade has been established, the depth of the connection shall be based on the assumed future street grade or on the present street or ground surface, as determined by the Engineer. At times when pipe laying is not in process, the open ends of the pipe shall be closed by a watertight plug or other approved means. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.

- H. Stubs - Stubs for future sewer pipe shall be installed as indicated by the drawings. If the specified length of the stub is exceeded, there will be no additional cost to Utility Owner unless the extra length is ordered by the Engineer. Existing sewer pipe stubs shall be removed as required, but only when directed by the Engineer.
- I. Stacks - Stacks shall be constructed as and where directed. The height of the stack shall be as indicated on the drawings, set forth in the proposal, as determined by the Engineer. The stack shall encased in-concrete in accordance with the Design Plans.
- J. Drop Inlets - Drop inlets to the manhole shall be constructed as and where indicated by the drawings of either of the types shown on the Design Plans, as directed by the Engineer.
- K. Cleanouts - Cleanouts on all service laterals shall be installed at the location shown on the plans and in accordance with the Design Plans.
- L. Manholes - Manholes shall be constructed as shown in Design Plans to the elevations shown on the plan-profile sheets, and in accordance with manufacturer's installation instructions.
 - 1. Prepare excavation at manhole location should be at least 12-inches wider than the proposed concrete foundation slab specified and to provide working room around manhole.
 - 2. Verify the depth of manhole is sufficient to allow 12 to 18-inches from the finished grade and the cone support ring, as per design plans.

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3. For unstable trench foundation, provide a minimum of 4 to 6-inches of crushed limestone or 2-inch gravel, or until a stable foundation is achieved.
 4. Set manhole as per manufacturer's installation instructions. Level and plumb manhole and connect sewer lines to manhole with a seal ring as manufactured by Northtown Pipe Protection Products or equal (as per ASTM C-923 requirements). A concrete base encasement shall be placed at least 12 inches outside of the diameter of the manhole and shall come over the top of the anti-flotation ring a minimum of 12 inches. All sides of incoming and outgoing sewer lines shall be covered with a minimum of 6-inches of concrete. Manhole levels shall be verified throughout the placement and finishing of concrete base construction.
 5. Backfilling is allowed as soon as the concrete base has hardened enough to provide sufficient support for manhole and fill. Native soil (or band run sand, as specified in Section 31 06 20.16 – Utility Backfill Materials, in unstable areas), free of large stones, debris, or concrete chunks may be used for backfill. Backfill should be placed evenly around manhole in 12" maximum loose lifts and should thoroughly tamped to 90% standard proctor density. Each layer shall be completely compacted before the next layer is installed to avoid uneven lateral pressure which could move the manhole out of plumb. Backfill material shall be subject to approval by the Engineer.
 6. Contractor shall maintain the stability of the excavation during backfilling of the manhole which includes both trench protection and dewatering efforts.
 7. To bring the manhole to finished grade and provide support for ring and cover, construct chimney using polyethylene rings by Lad Tech or approved equal.
- A. Concrete Coating - All concrete surfaces within the manhole shall be coated with 100% solids, solvent-free ultra-high build epoxy coating system. Surfaces to be coated shall be cleaned by sandblasting or by water-blasting with 10% muriatic acid prior to coating. Coating system shall consist of 125 mils of Raven 405 epoxy coating, applied in accordance with manufacturer's recommendations, alternative coating system approved in advance by Engineer.
- B. Stoppers and Bulkheads - Open ends of pipes and branches smaller than 15 inches in diameter shall be sealed with stoppers, plugs, or caps, cemented into place in an acceptable manner using a rubber gasket between the stopper and socket. All openings to the pipeline shall be satisfactorily protected from the entrance of earth, water or other material. If a temporary bulkhead is constructed to prevent sewage from backing into the trench excavation or to prevent foreign material from entering the sewer from the new sewer trench, the contractor shall be responsible for reconstructing, repairing, or replacing those portions of the existing sewers removed or damaged by his operations. Existing bulkheads shall be removed as indicated by the drawings or set forth in the proposal, but not until directed by the Engineer.

1.2 TESTING

A. All sewer lines must be tested in accordance with 30 TAC §217.57. The Owner must retain copies of all test results which must be made available to the executive director upon request. The Owner must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system.

1. For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test in accordance with ASTM F-1417.

a. Low Pressure Air Exfiltration Testing: The following materials will be furnished by the contractor and utilized for air testing sewer mains:

1) Compressor Air Supply: Any source which will provide at least three hundred (300) cubic feet per minute at one hundred (100) pounds per square inch. The compressor air supply shall be furnished by the contractor.

Plugs, valves, pressure gauges, air hose, connections and other equipment necessary to conduct the air test shall be furnished by the contractor. The test equipment for air testing will consist of valves, plugs, and pressure gauges used to control the rate at which air flows to the test section and to monitor the air pressure inside the plugs. Test equipment shall be assembled as follows:

- a. hose connection
- b. shut off valve
- c. throttle valve
- d. pressure reduction valve
- e. gauge cock
- f. monitoring pressure gauge

2) Test Procedures - The following procedures will be utilized for air testing sewer mains:

- a. Apply air pressure until the pressure inside the pipe reaches 4 psig.
- b. Allow the pressure inside the pipe to stabilize, then bleed back to 3.5 psig.
- c. At 3.5 psig, the time, temperature and pressure will be observed and recorded. A minimum of five (5) readings will be required for each test. If the time in seconds for the air pressure to decrease from 3.5 psig to 2.5 psig is greater than that shown in the following table, the pipe shall be presumed to be free from defect. When these rates are exceeded, pipe breakage, joint leakage, or leaking plugs are indicated and an inspection must be made to determine the cause. The contractor shall affect such repairs as may be required to accomplish a successful air test.

Table 1 Minimum Test Time for Various Pipe Sizes

| Nominal Pipe Size, in. | T(time) min/100 ft. | Nominal Pipe Size, in. | T(time) min/100 ft. |
|---------------------------|------------------------|---------------------------|------------------------|
| 3 | 0.2 | 21 | 3.0 |
| 4 | 0.3 | 24 | 3.6 |
| 6 | 0.7 | 27 | 4.2 |
| 8 | 1.2 | 30 | 4.8 |
| 10 | 1.5 | 33 | 5.4 |
| 12 | 1.8 | 36 | 6.0 |
| 15 | 2.1 | 39 | 6.6 |
| 18 | 2.4 | 42 | 7.3 |

- b. Leakage Test - A leakage test may be requested by the Owner to determine excessive infiltration and to assure that the sewer section is substantially watertight. The Engineer may order the contractor to make leakage tests of as many sections as may be necessary to determine whether the work complies with the criteria for the rate of leakage. A section shall consist of a reach from one manhole to the next manhole provided the manholes are at least 300 feet apart and preferably 400 feet. Leakage tests shall be conducted, and measurements made, for a minimum of one hour. The tests may be conducted over a longer period with no reduction in the rate of leakage.
- 1) Leakage into Sewer - Leakage into the sewer including manholes, shall not exceed a rate of 50 gallons per 24 hours per inch diameter per mile of sewer. There shall be no gushing or spurting streams entering the sewer or manhole and where encountered they shall be repaired regardless of the rate of infiltration at no additional cost to Utility Owner. Where practicable, the tests for leakage into the sewers shall be made at a time when the groundwater level is at a maximum, but it must be at least one foot above the top of the pipe of the highest elevation in the section being tested.

- 2) Leakage out of Sewer - Where the groundwater level is less than one foot above the top of-the pipe and where conditions will permit, the sewers shall be subjected to an internal pressure by plugging the pipe at both ends and then filling the sewer and manholes with clean water to a height above the top of the pipe sufficient to obtain satisfactory measurements to determine the rate of leakage, but no less than 2-feet above the top of the upstream pipe. The rate of leakage from the sewers will be determined by the amount of water volume lost during the testing period or by the volume of water needed to maintain the original water surface level. Leakage from the sewers under test shall not exceed a rate of 50 gallons per 24 hours per inch diameter per mile of sewer, except that an allowance of an additional 10 percent of gallonage shall be permitted for each additional 2 feet of head over a basic 2-foot minimum internal head.
- 3) Requirements of the Contractor - The contractor shall construct such weirs or other means of measurements as may be required, shall furnish water and shall do all necessary pumping to enable the tests to be properly made. When a leakage test fails, the contractor shall do such other work as may be necessary until the rate of leakage meets the above requirements, as determined by additional leakage tests.

c. Deflection Testing for Gravity PVC Sewer Lines

- 1) No sooner than 30 days, nor later than 12 months after the pipe has been installed and backfilling has been completed, tests for deflection will be made. A deflection of more than 5 percent of the inside diameter of the pipe shall be cause for rejection, and the line will be removed and replaced at the contractor's expense. A GO-NO-GO Deflection Testing Mandrel, to be furnished by the contractor, and certified by the Owner and Engineer, shall be used. The testing shall consist of the following:
 - a. Completely flush the line, if required, making sure the pipe is clean of any mud or debris that would hinder the passage of the mandrel.
 - b. During the final flushing of the line, attach a floating block or ball to the end of the mandrel pull rope and float the rope through the line.
 - c. After the rope is threaded through the line, connect the pull rope to the mandrel and place the mandrel in the entrance of the rope.
 - d. Connect a retrieval rope to the back of the mandrel to pull it back if necessary.
 - e. Remove all slack in the pull rope and place a tape marker on the rope at the ends of the pipe where the mandrel will exit, determining the location of the mandrel in the line.

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- f. Using manhole guide pulleys, draw mandrel through the sewer line, if any irregularity of pipe deformation exceeding the allowable 5 percent is encountered in the line, the line shall be uncovered at the point.
 - g. If an obstructed or over-deflected section is found, locate it; uncover pipe; inspect the pipe; if any damaged pipe is found, replace it. Backfill as per design plans.
 - h. Re-test this entire section for deflection.
 - i. Any pipe removed shall be replaced by use of gasketed repair couplings. Every deflection test shall be conducted in the presence of the Owner's or Engineer's representative.
- 2) The Contractor shall furnish all labor and material required to clean and flush and complete all testing required by this specification in accordance with Section f, below. The Owner, at their discretion, may televise the sewer lines. The Contractor shall furnish and install all required traffic control methods, as per TMUTCD, needed for the Owner to conduct the televising of the Work. If there is an insufficient roadway within the project area, the contractor will furnish the equipment necessary to gain full access to the site.
- d. Manhole Leakage Testing
- 1) After completion of manhole construction, wall sealing, or rehabilitation, but prior to backfilling, test manholes for water tightness using hydrostatic or vacuum testing procedures. Manholes shall be tested after installation with all connections (existing and/or proposed) in place. Final acceptance in accordance with the requirements of this specification will consist of vacuum testing of the completed and installed manhole in place to include manhole/adjustment rings and manhole casting. The Contractor shall furnish all labor and material required to complete all testing required by this specification.
 - a. Vacuum Testing: Vacuum testing shall be performed as follows:
 - 1. Plug influent and effluent lines, including service lines, with suitably sized pneumatic or mechanical plugs. Ensure plugs are properly rated for pressures required for test; follow manufacturer's safety and installation recommendations. Place plugs a minimum of 6 inches outside of manhole walls. Brace inverts to prevent lines from being dislodged if lines entering manhole have not been backfilled. Install vacuum tester head assembly at top access point of manhole and adjust proper seal on straight top section of manhole structure. Following manufacturer's instructions and safety precautions, inflate sealing element to the recommended maximum inflation pressure; do not overinflate.

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2. Evacuate manhole with vacuum pump to 10 inches mercury (Hg), disconnect pump, and monitor vacuum for two minutes.
 3. If the vacuum pressure drop exceeds 1-inch Hg over a two-minute time period, locate leaks, complete repairs necessary to seal manhole and repeat test procedure until satisfactory results are obtained.
 4. MATERIALS - Test equipment shall be assembled as follows:
 - ii. Engine
 - iii. Vacuum Pump
 - iv. Hose
 - v. Test Head Device capable of sealing opening in manhole casting as required.
 - vi. Pneumatic test plugs – These plugs shall have a sealing length equal to or greater than the diameter of the connecting pipe to be sealed.
 - vii. monitoring pressure gauge (rotameter)
- b. Hydrostatic Exfiltration Testing: Hydrostatic exfiltration testing shall be performed as follows:
1. Seal wastewater lines coming into the manhole with an internal pipe plug. Then, fill the manhole with water and maintain it full for at least one hour.
 2. The maximum leakage for hydrostatic testing shall be 0.025 gallons per foot of manhole diameter per foot of manhole depth per hour.
 3. If water loss exceeds amount tabulated above, locate leaks, complete repairs necessary to seal manhole and repeat test procedure until satisfactory results are obtained.
- c. All testing shall be done by the contractor and witnessed by the Owner. All manholes and structures shall be tested as finished and completed for final acceptance.
- Any defective work or materials shall be corrected or replaced by the contractor and retested. This shall be repeated until all work and materials are acceptable.
- e. Force Main Hydrostatic Testing
- 1) After the pipe and appurtenance have been installed, test line and drain. Prevent damage to the Work or adjacent areas. Use clean water to perform tests.
 - 2) The Owner may direct tests of relatively short sections of completed lines to minimize traffic problems or potential public hazards.

- 3) Test pipe in the presence of the Owner.
- 4) Test pressures shall be at the normal operating pressure of the force main plus 50 psi. Normal operating pressure of the force main shall be the rated total dynamic head with all lift station pumps operating.
- 5) Test pipe at the required pressure for a minimum of 4 hours according to requirements TCEQ Chapter 217.68 requirements.
- 6) Maximum allowable leakage shall be as calculated by the following formula:

$$L = (S) (D) (P^{0.5}) / 155,400$$

Where:

- L = Acceptable Leakage (gallons/hour/1,000-feet of pipe, based on a leakage rate of 10 gallons per inch of diameter per mile of pipe per day).
- S = Length of pipe (feet).
- D = Inside diameter of pipe (inches).
- P = Pressure (pounds/square inch).

- 7) Correct defects, cracks, or leakage by replacement of defective items or by repairs as approved by the Utility Owner.
 - 8) Plug openings in the force main after testing and flushing. Use cast iron plugs or blind flanges to prevent debris from entering the tested pipeline.
- f. Sanitary Sewer Television Inspection

The Owner, at their discretion, may televise the sewer lines to determine all sources and conditions of the leakage. The Owner will provide all personnel and televising equipment for the test.

- 1) After construction of the sanitary sewer main and prior to placement of the final course of asphalt, the newly constructed sanitary sewer shall be televised immediately upon cleaning. Any abnormalities such as, but not limited to, misaligned joints, cracked/defected pipe, rolled gaskets, shall be repaired by the contractor at his expense. Sections requiring repair shall be re-televised to verify condition of repair. No additional compensation shall be provided for repair or re-televising.

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- 2) If necessary, the Contractor shall perform bypass pumping operations in accordance with all other specification requirements and as outlined below.
- a. The Contractor shall furnish all labor, supervision, tools, equipment, appliances, and materials to perform all operations in connection with bypass pumping of sewage flow for the purpose of preventing interference with the televising of the sanitary sewer manholes and mainlines as well as providing reliable sewer service to the occupants of the buildings being served.
 - b. The Contractor will be required to provide adequate pumping equipment and force mains in order to maintain reliable sanitary sewer service in all sanitary sewer lines involved in this project. The Contractor shall notify the Owner should a surcharge occur during the televising process which results in overflows of sewage. In case of bypass equipment failure, the Contractor shall discontinue work and release sewer flows until such time as equipment failure is corrected.
 - c. The location of the pump(s), force main(s), and discharge points shall be approved by the Owner. Under no circumstances shall the flow be interrupted or stopped, such that damage is done to either private or public property, or sewage flows or overflows into a storm sewer or natural waterway.
 - d. The Contractor shall provide bypass pumping of sewage around each segment(s) of pipe that is to be televised and shall be responsible for all required bulkheads, pumps, equipment, piping, and other related appurtenances to accomplish the sequence of pumping. A qualified person shall man the pumps, on-site, at all times during the bypassing procedure.
 - e. All piping, joints, and accessories shall be designed to withstand the maximum bypass system pressure, or a minimum of 50 psi, whichever is greater. During bypass pumping, no sewage shall be leaked, dumped, or spilled into or onto any area outside of the existing sanitary sewer system. When bypass pumping operations are complete, all piping shall be drained into the sanitary sewer prior to disassembly.
 - f. The Contractor shall demonstrate that the pumping system is in good working order and can successfully handle flows during cleaning and televising operations, prior to commencing with the cleaning and televising of the system.
 - g. The Contractor shall be required to have all materials, equipment, and labor necessary to complete the repair or replacement on the jobsite prior to isolating the sewer manhole or line segment and beginning bypass pumping operations.

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- h. The Contractor shall plug off and pump down the sewer manhole and/or line segment in the immediate work area and shall maintain the sanitary sewer system so that surcharging does not occur. The Contractor shall coordinate with all property owners to ensure that no damage will be caused to their property during any and all sewer televising work. The Contractor shall complete the televising as quickly as possible and shall satisfactorily meet all requirements prior to discontinuing bypass pumping operations and returning flow to the sewer manhole or line segment. The Contractor shall ensure that no damage will be caused to private property as a result of bypass pumping operations. Ingress and egress to adjacent properties shall always be maintained. Ramps, steel plates, or other methods shall be employed by the Contractor to facilitate traffic over surface piping.
 - i. If sewage accidentally drains into the drainage system or is spilled within the project, the Contractor shall immediately stop the overflow, notify the Owner, and take the necessary action to clean up and disinfect the spillage using an HTH, or equal, chemical.
 - j. Traffic management shall be done under the approval of respective City, County, or State Traffic Departments. The Contractor shall not open cut existing streets to accommodate bypass pumping piping unless specific written approval is given.
- g. Pigging Test
- 1) After completion of hydrostatic testing and prior to final acceptance, test force mains longer than 200 feet by pigging to ensure piping is free of obstructions.
 - 2) Pigs: Provide proving pigs manufactured of an open-cell polyurethane foam body, without any coating or abrasives which would scratch or otherwise damage interior pipe wall surface or lining. Pigs shall be able to pass through reductions of up to 65 percent of the nominal cross-sectional area of the pipe. Pigs shall be able to pass through standard fittings such as 45-degree and 90-degree elbows, crosses, tees, wyes, gate valves, or plug valves, as applicable to the force main being tested.
 - 3) Test Execution: Pigging test shall be conducted in the presence of the Utility Owner. Provide at least 48-hour notice of scheduled pigging of the force main prior to commencing the test.

END OF SECTION

Section 33 42 12 - STORM DRAINAGE SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Storm drainage system includes, but is not limited to construction of storm sewers, drainage structures, drainage appurtenances, riprap, ditching, backfilling, shoring and dewatering of trenches for storm sewers as required for safe and workmanlike construction.

1.2 UNIT PRICES

A. Unit Prices.

1. Payment for storm sewer lines installed by open cut is on a linear foot basis for each size and class of pipe installed. Mains are measured along the axis pipe. Branch storm sewer pipes, as shown on the drawings, are measured from center to center of structures.
2. Payment of storm sewer inlets will be on a unit price basis for each type of inlet installed, regardless of depth.
3. Payment of storm sewer manholes will be on a unit price basis for each diameter manhole installed, regardless of depth.
4. Payment of storm sewer junction boxes will be on a unit price basis for each size junction box installed, regardless of depth.
5. Payment of storm sewer conflict manholes will be on a unit price basis for each conflict manhole installed, regardless of depth. The unit price shall include the conflicting utility crossing casing, as shown in the design details.
6. Payment of storm sewer outfall headwalls will be on a unit price basis for each diameter headwall installed.
7. Payment of storm sewer outfall canasta headwall or outfall riprap will be on a square foot basis at the thickness shown in the design plans.

1.3 QUALITY ASSURANCE

- A. Storm drainpipe may be inspected at the manufacturing source as well as at the job site by the Engineer.
- B. Storm drainage systems serving public streets shall be constructed under the inspection of the owning governmental agency. Final acceptance of governmental agency is required prior to final payment under this contract.

PART 2 - PRODUCTS

2.1 BEDDING MATERIAL

- A. Bedding material shall be specified in the drawing details.

2.2 STORM DRAINPIPE MATERIALS

- A. Reinforced Concrete Pipe is to be of the size and type shown on the drawings meeting the following conditions:
1. Reinforced concrete pipe and special fittings shall be reinforced concrete culvert, storm drain and sewer pipe conforming to the latest requirements of ASTM Standard Specifications, Serial Designation C-76. Pipe shall be centrifugally cast or vibrated, horizontally or vertically cast or made on a Packerhead machine and shall be furnished in lengths not less than four feet (4') and gasketed.
 2. Each pipe shall be clearly marked as required by the Standard Specifications to show its class, date of manufacturer and name or trademark of the manufacturer.
 3. Any pipe which has been broken, cracked or otherwise damaged before, during or after delivery, or which has failed to meet the required tests shall be removed from the site of the work and shall not be used therein.
 4. All pipe and special fittings shall be new materials which have not been previously used.
 5. Nominal inside diameter shall be as shown on the drawings, or as directed by the Engineer.
 6. Portland cement and mortar sand for this construction of storm drainage pipe and culverts must be on the project, proven to be the first-class working condition before construction will be permitted to begin.
 7. The Contractor shall provide hoisting equipment to handle the pipe in unloading and placing in its final position, without damage to the pipe.
- B. High-Density Polyethylene (HDPE) pipe shall have a smooth interior and annular exterior corrugations. For 12- through 48-inch (300 to 1200 mm) shall meet AASHTO M294, Type S, 60-inch (1500 mm) shall meet AASHTO MP 7, Type S.

1. Joint Performance - Pipe shall meet the requirements of AASHTO M294, or AASHTO MP7. 12- through 60-inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. 12- through 30-inch (300 to 750 mm) bells shall include a reinforcing rib at the flare O.D. to assure meeting roundness tolerances and enhance proper joint assembly. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 24- through 60-inch (600 to 1500 mm) diameters shall have a reinforced bell & spigot including a bell tolerance device. The bell tolerance device shall be installed by the manufacturer and covered with a protective wrap. The gasket corrugation shall be reinforced with a closed cell structural foam core.
2. Fittings - Fittings shall conform to AASHTO M294 or AASHTO MP7. Fabricated fittings shall be welded at all accessible interior and exterior junctions.
3. Material Properties - Pipe and fitting material shall be high-density polyethylene meeting ASTM D3350 minimum cell classification 335400C. The pipe material shall be a slow crack resistant material evaluated using the single point notched constant tensile load (SP-NCTL) test. Average SP-NCTL test specimens must exceed 24 hrs. with no test result less than 17 hrs. The closed cell structural foam core must have a free rise density no less than 3 lbs/ft³ and compressive strength no less than 20 lbs/in².

2.3 APPURTENANCE MATERIAL

- A. Concrete for storm drainage constructions shall be in accordance with appropriate section of the Specifications for this project. Strength shall be 4,000 psi at age 28 days.
- B. Reinforcement - Comply with ASTM A-615
- C. Castings - Comply with ASTM A 48, grey cast iron.
- D. If Contractor desires to substitute precast drainage structures for structure detailed on the plans, he shall submit design drawings to the Owner and Engineer for consideration. If precast are acceptable by the Engineer, shop drawings for construction will be required.

PART 3 - EXECUTION

3.1 GENERAL

- A. All pipe will be laid in an open trench of dimensions as shown on the drawings. No projecting conditions will be allowed.

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- B. Lengths of storm drainpipe shown on the drawings are approximate distances center to center of structures. Slopes are approximate. The Contractor shall install pipe based on actual field measurements after locating drainage structures in accordance with plan requirements.
 - C. Care shall be exercised in establishing the relationship of storm drainage pipe, drainage structure bases and final drainage top conditions. Drainage structure tops are required to be located in specific position and orientation. Subsurface construction to be located to allow drainage structure construction as detailed on the drawings without modification. In case of misalignment of drainage structure tops and bases, the Contractor will be required to correct the construction as directed by the Engineer.
 - D. All connections to the existing storm sewer system shall be cleaned with a high-pressure fire hose to clean all silt and debris from piping and inlets.

3.2 EXCAVATION

- A. All excavation shall be unclassified. Excavate all rock, if encountered, and all other unsuitable materials, at no additional cost to the Owner.
- B. Should rock be encountered in the trenches, use a backhoe or ripper, until the use of such equipment is not practical.
- C. Notify the Engineers and receive written instructions prior to further rock excavation.
- D. No blasting shall be permitted.
- E. Excavation shall be by open cut. The top portion of the trenches may be excavated as required by the Contractor to any width which will not cause damage to any adjacent structure. The portion of the trench from one foot (1') above the top of the pipe and below shall not exceed the dimensions shown on the drawings.
- F. Excavate bottom of trench to uniform grade to achieve stable trench conditions and satisfactory compaction of foundation or bedding materials.
- G. Sand bedding shall meet Bank Run Sand as per Section 31 06 20.16 – Utility Backfill Materials.
- H. Sand bedding from 6 inches below bottom of pipe to bottom of pipe shall be placed in one lift and shall be mechanically tamped. Sand bedding from bottom of pipe to spring line of pipe shall be placed by hand in 4-inch lifts and shall be hand tamped with proper tools. Sand bedding from spring line of pipe to 6 inches above top of pipe shall be placed in 6-inch lifts and shall be hand tamped with proper tools.
- I. Excavated material shall be hauled off site at no additional cost to Owners.

3.3 BACKFILLING

- A. Backfilling shall be as specified in Section 31 06 20.16 – Utility Backfill Materials and as per the design plans.

3.4 APPURTENANCES

- A. All drainage structures are to be constructed as shown on the drawings and in accordance with generally accepted construction practice. Refer to site plans for location and size.
 - 1. The Contractor shall furnish and install drainage structure as shown in detail on the drawings.
 - 2. Structure bottoms shall have shaped inverts.
 - 3. All mortar joints shall be filled fully. Joints shall be struck flush inside and out.
 - 4. All pipe, where cut at the face of the structure wall, shall be cut and ground smooth with the face of the wall.
 - 5. All joints around pipe and structure walls at the face of the wall shall be packed full with mortar.
- B. The bottom of drainage structures shall be clean of all debris and walls shall be clean of mortar as work progresses.

3.5 CLEANUP

- A. Sewers and structures shall be left clean and free from mud or debris of any kind. During visual inspection, each line between structures shall show a full circle of light. Otherwise, the Contractor shall be required to remove and replace the defective portion of the work at his own expense.

END OF SECTION

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Section 33 42 41.31 - FRAMES, GRATES, RINGS, AND COVERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Iron castings for manhole frames and covers, inlet frames and grates, catch basin frames and grates, meter vault frames and covers, adjustment rings, and extensions.
- B. Ring grates.

1.2 UNIT PRICES

- A. Unit Prices.
 - 1. No payment will be made for frames, grates, rings, covers, and seals under this Section. Include payment in unit price for related item.

1.3 REFERENCES

- A. AASHTO - American Association of State Highway and Transportation Officials Standard Specification for Highway Bridges.
- B. ASTM A 48 - Specification for Gray Iron Castings.
- C. ASTM A 615 - Standard Specification for Deformed Billet-Steel Bars for Concrete Reinforcement.
- D. AWS - D 12.1 Welding Reinforcing Steel.

1.4 SUBMITTALS

- A. Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- B. Submit copies of manufacturer's specifications, load tables, dimension diagrams, anchor details, and installation instructions.
- C. Submit shop drawings for fabrication and installation of casting assemblies that are not included in Drawings. Include plans, elevations, sections and connection details. Show anchorage and accessory items. Include setting drawings for location and installation of castings and anchorage devices.

PART 2 - PRODUCTS

2.1 CASTINGS

- A. Castings for frames, grates, rings and covers shall conform to AASHTO M 306-07 requirements of "Gray Iron Castings" AASHTO M105-06/ASTM A48 Class 35B. Castings shall be capable of withstanding the application of an AASHTO H-20 loading without permanent deformation.
- B. Producing Foundry Certification: The Contractor shall submit certification stating that the castings have been produced in facilities operating in accordance with the applicable laws and regulations of the United States and the State of Texas. The Certification shall state the country of origin of the castings. The certification shall also include a report of the test results.
- C. Fabricate castings to conform to the shapes, dimensions, and with wording or logos shown on the Drawings. Standard dimensions for manhole covers are 32 inches in diameter.
- D. Castings shall be clean, free from blowholes and other surface imperfections. Cast holes in covers shall be clean and symmetrical, free of plugs.

2.2 BEARING SURFACES

- A. Machine bearing surfaces between covers or grates and their respective frames so that even bearing is provided for any position in which the casting may be seated in the frame. All grates and covers shall be installed on a steel frame or ring inset into concrete or as shown in the design plans.

2.3 SPECIAL FRAMES AND COVERS

- A. Sanitary Sewer: Where indicated on the Drawings, provide watertight manhole frames and covers with a minimum of four bolts and a gasket designed to seal cover to frame. Supply watertight manhole covers and frames, Model V-1430A (32-inch cover diameter, 40 3/4-inch base frame diameter and 4 1/2" height) assembly with "Brownsville Public Utilities Board" and "Sanitary Sewer" as manufactured by East Jordan Iron Works, or approval equal.
- B. Storm Sewer: Where shown on the Drawing, provide storm sewer manhole frames and covers, Model V-1432 Frame and Cover (with City of Brownsville Logo and "Storm Sewer") (32-inch cover diameter, 40 1/4-inch base frame diameter and 4 7/8" height) manufactured by East Jordan Iron Works, or approval equal.

2.4 SPECIAL GRATES

- A. For ADA applications, provide drainage grate Model V-5636-80 manufactured by East Jordan Iron Works, or approval equal.

2.5 FINISH

- A. Unless otherwise specified, coat iron castings with the manufacturer's standard asphaltic paint.

2.6 FABRICATED RING GRATES

- A. Only allowed with approval of the Engineer in non-traffic and non-pedestrian areas.
- B. Ring grates shall be fabricated from reinforcing steel conforming to ASTM A 615.
- C. Welds connecting the bars shall conform to AWS D 12.1.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install castings according to approved shop drawings, instructions given in related specifications, and applicable directions from the manufacturer's printed materials.
- B. Set castings accurately at required locations to proper alignment and elevation. Keep castings plumb, level, true, and free of rack. Measure location accurately from established lines and grades. Brace or anchor frames temporarily in formwork until permanently set.

END OF SECTION

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